DO MUTUAL FUND MANAGERS GO WITH THE FLOW? AN EXAMINATION OF FUND MANAGER'S RESPONSE TO CAPITAL CONTROL POLICIES

A Thesis

Presented to the Faculty of the Graduate School

of Cornell University

In Partial Fulfillment of the Requirements for the Degree of

Master of Science

by

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August 2014

ABSTRACT

This paper builds on earlier reputation models and investigates fund manager's response when given an exogenous signal capital control signal by the Bank of Thailand (BOT). In so doing, this paper seeks to test out three hypotheses 1) the Wait-and-see hypothesis 2) the Signaling Hypothesis, and 3) Separating Equilibrium. Using a novel fund-level dataset by the Emerging Portfolio Fund Research (EPFR)[1] dating from 2003-2013 in six Emerging Asia countries; Korea, Malaysia, Taiwan, Indonesia, The Philippines, and Thailand and a higher frequency Capital Control Index (CCI), we find that a separating equilibrium outcome in portfolio investment patterns of mutual fund managers can result; skilled fund managers try to separate themselves from the pool by taking excessive risk through their portfolio choices. The finding shed lights on how macroeconomics policy results in idiosyncratic response of individual agents that can be used to assess potentially distortion to the overall welfare.

[1]This dataset is by far the most comprehensive resource for portfolio investment data, used in several research works by the International Monetary Fund, European Central Bank, and academic institutions.

BIOGRAPHICAL SKETCH

Pensiri Kangvonkit is a first-year master student at Cornell University's Charles H. Dyson School of Applied Economics and Management, where her research concentration is Financial Economics.

Between her school year at Cornell, Pensiri also fulfilled her responsibility as a Fulbright scholar. She attended the Fulbright Enrichment Seminar in Washigton, DC and participated in the community work service at Carol Manor Nursing home. The experience and skills complement her academic life and prepare her well for her future role as a policy-maker.

Prior to coming to the graduate school, Pensiri spent two years working as an economist at the central Bank of Thailand (BOT). There, she analyzed and prepared key macroeconomic forecasts for the Monetary Policy Group (MPG). More recently, she spent one year in Cambridge and successfully obtained her MPhil degree in Economics.

Pensiri was born in Chonburi, the Eastern province of Thailand, then moved to Bangkok, Thailand where she obtained her Bachelor of Arts in Economics from Thammasat University with the summa cum laude honor.

This thesis is dedicated to my family and Professor Calum G. Turvey.

ACKNOWLEDGMENTS

I would like to express my deepest appreciation to Dr. Calum G. Turvey, my research supervisor, for his faith, guidance, understanding, and support throughout the whole year. Also, I would like to extend my gratitude to my committee member, Dr. Sharon Poczter, for her helpful comments and advice.

I am thankful to the contribution from Mann Library, Cornell University, for obtaining the Emerging Portfolio Research Fund (EPFR) data. In particular, I would like to acknowledge the help from Thomas Ottaviano and the staffs at the EPFR, for their coordination and support. My sincere gratitude also goes to my fellow colleagues at the Bank of Thailand (BOT) for their insightful information and suggestions.

I would also like to extend my thanks to Linda G. Sanderson and every staff at the Dyson School for their help during my graduate student life.

Most importantly, I am deeply grateful for the constant support and love from my father Paisan Kangvonkit, mother Pisuthorn Kangvonkit, and sister Pimsiri Kangvonkit. I am blessed to have all of you in my life.

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CHAPTER 1

INTRODUCTION

Capital Controls (CC) refer to actions taken by central banks to stabilize exchange rates, contain the influx of short term capital inflows, affecting interest rates by imposing restrictions on bank capital ratios, and accelerate or decelerate credit demand in domestic and international markets. A resulting change in these macroeconomic conditions following the implementation of the capital control policies can have a significant impact on the financial market as it directly affects both the return and volatility of different asset classes in bond and equity markets.

However, capital control policies also send out signals to the financial markets (foreign and domestic) in addition to the previous traditional transmission mechanism. For example, it can signify a change in a country's long-term attractiveness, as well as a change in the central bank's stance towards foreign investors. For example, Forbes et al. (2012) finds that an increase in Brazil's fixed income tax on foreign investors lead not only fixed income, but also equity investors to decrease their exposure to Brazil. In the same context, this paper attempts to highlight the importance the capital control signal in affecting the portfolio investment behavior of the mutual fund managers. The micro-level results regarding the portfolio choice of mutual fund managers can be used by future research to understand the potential distortions which may arise following an implementation of capital control policies.

1.1 Background

1.1.1. Delegated Portfolio Management

The mutual fund industry operates under the so-called Delegated Portfolio Management system (DPM), where households or investors allocate their capital to several fund managers, who then decide on how much to invest in a range of risk-free and risky assets. In return, fund managers derive his income in form of a fraction of total assets he manages. Asymmetric information arises as investors do not have perfect information on the quality of each fund manager, and this leads to a signaling game; each fund manager will try to build credible reputation through his investment choices in order to attract as much capital as possible given the asymmetric information. In this context, distortions can result when the choice that optimizes fund manager's reputation differs from the one that would maximize returns from investment. This paper builds on earlier reputation models and investigates fund manager's response when given an exogenous signal, which, in this case, is the capital control signal by the Bank of Thailand (BOT).

In a signaling game, fund managers are usually classified to be either skilled or unskilled. Unskilled fund managers have the ability to extract meaningful information from any signal and then make an optimal portfolio allocation accordingly. On the contrary, unskilled fund managers do not possess such ability. They will therefore make less informative portfolio choices or try to mimic that of the skilled fund managers. Consequently, actions taken by other fund managers are also important in the signaling game. When information about fund manager's ability is private, unskilled managers have to conceal their inferior ability by trying to herd with the pool. Also, they can avoid responding to meaningful investment signals due to "sharing the blame" effect, where similar actions are easier to justify to investor.[2]

More recently, a number of papers find that skilled fund managers attempt to take extra risk in their portfolio choices to signal their quality.[3] However, most existing models rest upon the assumption of perfect information regarding the fund's ability, a rather rigid assumption and a sequential game structure. This paper therefore tries to test for the presence of a separating equilibrium in a more realistic setting, including a simultaneous game where market and investors learn about fund manager's ability with a time lag.

1.1.2 Effectiveness of Capital Control Policies

It is hard to generalize capital control due to the various forms and purposes it is designed for. Capital control can be clustered by the flow type it targets[4], or by the implementation means; controls may take the form of a price-based such as taxes, or quantity-based, as well as outright prohibitions.[5] For example, the central bank might impose restrictions to foreign investors who would like to withdraw capital invested in less than a year in order to prevent speculation. In a recent study, Jongwanich and Kohpaiboon (2012) classify capital controls into administrative and market-based controls; the former is usually direct and quantity-based, while the latter is mostly

[2] For more detailed illustration, see Scharfstein and Stein (1990)
[3] See Huberman and Kandel (1994), Chevalier and Avery (1999), and Huddart (1999)
[4] See Magud and Reinhart (2006), Ostry et al. (2010), and Gallanger(2012)
[5] See Neely 1999 and Milesi-Ferretti (1995)

indirect and price-based. For the purpose of distinguishing the effectiveness for a subset of control measures, this study will use the first categorization.

In a comprehensive literature survey regarding capital control effectiveness, Magud and Reinhart (2006) have pointed out that as long as the impossible trinity[6] is still at work, there is a role for the capital controls. In a more recent study, Stiglitz (2010) present a theoretical framework that justifies the role of capital control in circumstances where the benefits of international risk-sharing are outweighed by the costs of bankruptcy and contagion[7]. Even the IMF, a former advocate of capital market liberalization, has recently begun to advocate the use of Capital Flow Managements (CFMs). In the IMF's Staff Discussion Note, Ostry et al. (2010) concludes that the use of capital controls on inflows is justified when policy adjustment is limited and has a long time-lag effect, and such controls can retain potency even though investors devise strategies to bypass them.

Despite renewed theoretical interest the empirical evidence of capital control effectiveness is far from conclusive.[8]This is due mainly to a high degree of heterogeneity; control effectiveness in one country might not work in another country due to country-specific factors, the timing of measures implemented, and the types of capital controls[9]. Also, most of the papers employ binary variables to represent control

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[6]Most of the EMEs are small, open, and export-oriented, hence, under the Inflation Targeting regime; rising inflows can significantly complicate their policy conducts.[6] These economies therefore need capital controls not only to insulate themselves from sudden booms and busts, but also to add more degree of freedom for their monetary policy toolkits.
[7]See Gallagher (2012) for a comprehensive theoretical survey
[8] See Magud and Reinhart (2006) and Ostryet al. (2010)
[9] SeeForbes et al. (2012), Magud et al (2011), and Magud and Reinhart (2006)

measures, which cannot capture the impact resulting from a change in the intensity of control.[10]

Furthermore, “externality” effect from the capital controls becomes another highly interesting issue in the current globalization era that clearly warrants more attention. Kose et al. (2013) indicates that the importance of regional factors became more influential in explaining business cycles, especially in regions that experienced a sharp growth in intra-regional trade and financial flows. In this regard, the Asian region is no exception. Chantapacdepong (2012) also finds that the spillover effects of the CFMs measure exist among the East Asian Economies.

Thailand is deemed one of the good case studies for three reasons. First, capital account regulation had changed markedly over the past decade;the 2003-2013 periods highlight variations in the use of both control; inflows and outflows. Also, this period featured the highly controversial measures: the Unremunerated Reserve Requirement (URR) in 2006[11], which can potentially unravel the resulting externality effect that propagates within the region.

1.1.3. Capital Account Policies in Thailand

The capital account policies in Thailand during 2003-2013 have evolved from a focus on inflows restriction with outflow liberalization, focusing more on the latter

[10] See Jongwanich and Kohpaiboon (2012) regarding the construction and application of the capital control indexes.

[11] The URR measure is one of the capital control policies used to prevent the country from a sudden capital flight. Issued by the central bank, URR sets the minimum *percentage* of foreign investor’s deposit that can be withdrawn. If the fund is withdrawn within less than a year, 30% of the deposits will be detained. This increases the cost of capital and discourages speculation.

while enhancing other aspects such as risk management and private sector's financial literacy. The featured control measure introduced during this period is obviously the Unremunerated Reserve Requirement (URR) in 2006 on inflows, which receive a lot of criticism.

During the pre-URR period, 2003-2006, Thailand experienced a surge in the capital inflows, especially in form of FDI and portfolio investment. Increased inflows carry with it increased Baht appreciation, and more importantly speculated appreciation. Heavy intervention in the foreign exchange market results in the Bank of Thailand's (BOT) balance sheet loss, and increased a country' asset-liability mismatch in the capital account, with assets being mainly dominated by BOT's reserves.[12] Several issuances of the BOT bonds to sterilize domestic liquidity also further complicated the policy-making under the Inflation Targeting regime.[13] Therefore, with increased public pressure[14] and fear of baht speculation, BOT began to impose certain restrictions on inflows since 2003, but also began to liberalize controls on outflows, with the hope to achieve a more balanced capital flow position. Appendix A presents key measures taken by BOT during such period of dual mechanism of inflow restriction and outflow liberalization.

In terms of the signaling effect, most measures implemented by BOT are not deemed aggressive by the market. For example, in 2003, after the BOT strongly urged financial institutions to refrain from several speculative transactions, evidence showed

[12] See IMF's International Investment Position report, 2006

[13] Sterilization by issuing BOT bonds affects the yield curve, which is associated to asset prices and policy rate.

[14] Media at that time also stressed on large loss on BOT balance sheet as representing ineffective management.

that investors triedto evade the rule; there had been a sudden increase in Non-Resident Baht Accounts (NRBA)[15] from the normal level of 18 billion baht to 63 billion baht by October 2003[16]. Even right before the imposition of the URR, a rising number of Non Deliverable Forward (NDF) and NRBA were identified by the central bank authority.During this period, BOT began to issue several warnings against speculative transaction, but the situation did not change.

As a result, as the Baht appreciation peaked in the last quarter of 2006, BOT decided to impose the URR measure on 18th December 2006. It is a price-based, Chilean style restriction[17], with the goal to "(1) break the momentum of rapid one-way speculation on the baht and allow the baht movement to be more in line with regional currencies; (2) slow down the surge of inflows, which would enable the FX management to be more effective, especially during the period of ongoing concerns over the US dollar slide; and (3) provide time for the private sector to adjust to the sharp rise of the baht and for various measures implemented by the central bank aimed at stimulating domestic demand and achieving more balanced flows to bear fruit" (BOT Discussion paper 2009).

The announcement of the URR led to panic in the financial markets. In the following day, the SET Index plunged from 730.55 at the end of 18 December 2006 to 622.14. Both share prices and market capitalization all dropped dramatically, and trading had to be suspended during the day to stop investor panic. To regain market

[15] NRBA is the foreign investors' deposits at domestic financial institutions in local Thai Baht currency.
[16]See BOT Discussion Paper 2009
[17] Under the URR, all foreign transactions, excluding those pertaining to trade in goods and services, repatriation of investment abroad by residents, FDI, were required a 30% deposit of foreign exchange withthe BOT. If funds remained within Thailand for one year or more, such deposit is fully refunded. If funds repatriated before a year, only two-thirds of the amount was refunded.

confidence, BOT clarified that ten categories of capital inflows were exempted from the URR.[18] Even though the market rebounded significantly after the announcement, the SET did not surpass its pre URR level until May 2007.

The post-URR period has been characterized by gradual lift of measures indicated in the URR, and the URR was eventually fully lifted in 2008. Meanwhile, key events include the enactment of the BOT Act in 2008, which gives BOT greater flexibility in managing assets. With reduced pressure and more arrays of tools for stability management, BOT focus's more towards outflow liberalization measures. This includes the widening of assets available and an increased ceiling for domestic investors.

1.2 Objectives

This paper aims to show that a separating equilibrium can exist in DPM signaling game. In addition, we also explore the spill-over impact of capital control policies to other neighboring countries, thereby contributing to the little research directly exploring the externality effect of capital control policies at the micro level. We build on earlier reputation model by Huddart (1999) and employ a novel fund-level dataset by the Emerging Portfolio Fund Research (EPFR)[19] dating from 2003-2013 in six Emerging Asia countries; Korea, Malaysia, Taiwan, Indonesia,

[18] With the most relevant being portfolio investment inflows for companies listed in SET and MAI, FDI, foreign currency borrowings transacted prior to 19 December 2006, and foreign currencies bought or exchanged against baht of to less than $20,000 or equivalent. See BOT's Notice regarding the Rules and Practice on Currency Exchange, December 18, 2006 for full detail.

[19] This dataset is by far the most comprehensive resource for portfolio investment data, used in several research works by the International Monetary Fund, European Central Bank, and academic institutions.

the Philippines, and Thailand. Also, we construct a higher frequency capital control indexes by flow types in order to further differentiate the resulting potency of control measures.

Highlights from the paper include the introduction of the endogenous fund manager skill, which allows for a dynamic evolution of fund manager's quality. A naïve fund manager entering the market can later become a skilled one in this portfolio investment game. Also, we posit the heterogeneous beliefs and lagged responses of fund managers. All these underlying condition renders our model more realistic to the current financial setting while testing out the main theoretical framework of signaling game.[20] The result will unify what has previously deemed to be mutually exclusive and provides insights to the micro-level interaction in the international portfolio investment market.

1.3 Organization of The Thesis

The remaining sections are organized as follows. Chapter 2 presents a literature review regarding the capital control policies, signaling hypothesis, and delegated portfolio management. Chapter 3 gives an overview of the theoretical model framework and modification from previous model. Chapter 4 discusses the dataset and methodology used in the study. Chapter 5 presents the result and limitations, and Chapter 6 concludes.

[20]The concept was first introduced by Spence (1974), known as Spence Signaling Game.

CHAPTER 2

LITERATURE REVIEW

2.1 Capital Control Policies

Over the past few years, controls on inflows have gained a significant support, both theoretically, empirically, and in practice, by implementations of several Emerging Market Economies (EMEs).[21] Magud and Reinhart (2006) attempted to perform a meta-analysis on the effectiveness of capital controls on inflows and outflows by standardization of previous empirical findings.[22]His conclusion justifies the role of controls on inflows in increasing monetary policy independence, changing the composition of flows, and mitigating exchange rate volatility.

However, the results at the country level are still far from conclusive, varying according to countries and periods sampled. For Thailand in particular, Edison and Reinhart (2001) did not find any significant role of capital controls implemented in 1997. On the contrary, Coelho and Gallagher (2010) found that capital controls introduced in the 2000s were relatively effective in reducing overall volume of Thailand's capital inflows. Using data from 1993 to 2010 and the constructed capital

[21]Thailand, Taiwan, Brazil, and Korea are some of the example

[22]In the study, two indexes of controls are constructed to standardize all empirical findings: an index of Capital Controls Effectiveness and an index of Weighted Capital Control Effectiveness. The weight attached to the latter accounts for the degree of methodological rigor of each study in the sample.

control indexes, Jongwanich and Kohpaiboon (2012) found that Thailand's capital control policies can actually alter the composition of the flows.[23]

Regarding externality effect from capital controls or what several economists call "the new welfare economics of capital controls,"[24]empirical results are quite supportive. Korinek (2012), using a general equilibrium model, found that the welfare or externality effect exists in the world economy; capital controls or reserve accumulation in one country has significant international spillover effects by pushing down the global interest rates and resulting in stronger flows to other countries. Likewise, Forbes et al. (2012) found that Brazil's taxes on capital inflows had a significant externality effect; an increase in Brazil's taxes on inflows lead investors to decrease their portfolio allocations to Brazil in both bonds and equities, and simultaneously increase allocations to other countries having substantial exposure to China while also allocating their shares away from countries viewed as more likely to implement capital controls.

2.2 Signaling Hypothesis

The literature on signaling theories of capital control policies are mixed. Gelos (2011) and Broner et al. (2006) points to heterogeneous beliefs of fund managers. In interpreting the same signal, fund manager's preference, experience, and ability can also result in different response in terms of weight changes. Bartolini and Drazen (1997) develops a comprehensive model of capital control in a two period game and

[23] They find that the composition actually tilted towards a long-term flows i.e. FDI.
[24]Refer to the spill-over impact of capital control policies on other countries apart from the one that initiate the control. More detailed theoretical survey in Gallanger 2012

concludes that imposition of capital control in period one signals the higher probability of the control being implemented in period two. Hence, capital control is viewed as a negative signal for fund managers.

contrary contrast, Forbes et al. (2012) conduct a comprehensive survey among institutional investors and finds that imposition of controls can also imply a good signal if it increases long-term attractiveness, especially in a country where the central bank is perceived as credible. Moreover, capital controls imposed in one country can also lead fund managers to revise their expectation about the likelihood of capital controls being imposed in another country, implying the *bubble-thy-neighbor* effect in portfolio investment. Therefore, if the mixed support for signaling theories and the heterogeneous beliefs hold true, we should expect to see mixed coefficient signs in the coefficient of capital control variables.

2.3 Delegated Portfolio Management: Principal-Agent Problem

The DPM literature has developed into two strands. The first one focuses on the importance of the moral hazard problem within the principal-agent relationship, which is distinguished from that of traditional principal-agent problems[25]. Meanwhile, the second strand emphasizes the adverse selection problem and the signaling game, with fund managers as the players possessing different types of ability. Here, the question is not whether effort is exerted, but rather the action performed by different types. This paper is to explore further the second strand, with the aim to shed more

[25] In DPM context, the agent can control both return and volatility of the outcome, unlike in the traditional setting.

light on the behavior of fund managers' portfolio allocation following an exogenous signal, which, in this case, is the capital control policy issued by a country.

2.3.1 Adverse Selection and the Reputation Effect

Empirical work regarding the model with reputation or career concern effect often points in a pooling equilibrium outcome. Most of the herding literature rests upon an assumption of imperfect information about fund manager's type and is based on a sequential game.[26] However, in the current competitive financial market environment, it is reasonable to assume that the market has the mechanism, through time, to correctly learn the type of the agent[27]. For example, real-time access to data allows investor to closely track performances of fund managers. Holmstom (2012) also suggests that a wider range of investable assets and tools such as short-selling and leverage can further facilitate the differentiation of skilled fund managers from the pool through more sophisticated investing[28]. This is consistent with the finding of Koch 2012, who concludes that herd managers are the ones who underperform[29]. Hence, separations are usually tied to superiority in skills[30].

There is a relatively small literature documenting a separating equilibrium outcome given the reputational effects among fund managers. Among others, Chevalier and Avery (1999) develop a more general model based on that of

[26]See Scharfstein and Stein (1990), Graham (1999), Banerjee (1992), Admati and Pfleider (1997), and Stoughton (1993).
[27]This is also documented in Huberman and Kandel (1993) and Chevalier and Avery (1999).
[28] Since their portfolio choice is more difficult to be mimicked by the unskilled fund managers. Also, it is hard to maintain good returns on highly unpredictable assets using financial tools such as interest rate derivatives.
[29] Herd managers are fund managers who copy the action of other fund managers regardless of the signal.
[30]See also Prendergast and Stole (1996)

Scharfstein and Stein (1990) and introduce, for the first time, a more dynamic concept of skills. By incorporating the probability that a proportion of managers have meaningful information about their type, they find that signaling or contrarian equilibrium will replace the herding outcome once a fund manager accumulates sufficient private type information.[31] With the intention to build reputation, a skilled fund manager will therefore opt for a contrarian strategy and go against the market. Moreover, an unskilled manager will also find it optimal to anti-herd to conceal their inferiority.[32] The results suggest that young fund managers are likely to herd early and then deviate from the pool later in their career.

A separating outcome is also documented in Huberman and Kandel (1993). They show that a unique Riley Equilibrium that survives the Intuitive Criterion is achievable in their signaling model, where fund managers engage in excessive risk-taking to distinguish themselves from the pool. The highlight of the model is the introduction of the manager's skill as a Markov process, where previous period realization is highly correlated with the current one. They also assume that the market correctly learns about the type of fund managers with a two-period lag. The setting allows the model to be more sufficiently general that a pooling equilibrium outcome that may also arise under certain circumstances.[33] This is also consistent with the finding of Prendergast and Stole (1996), who concludes that agents will make investment choices that diverge from that of the group to signal the market that they possess meaningful information.

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[31]Pooling or herding outcome is the result documented in the model of Scharfstein and Stein (1990).
[32]See more detailed illustration in Chevalier and Avery (1999)
[33]In their model, pooling can survive the Intuitive Criterion when the manager has low precision information.

Among all research work in support of separating outcome, the model by Huddart (1999) is one of the most realistic settings. The model depicts a repeatable two-period simultaneous game, which is more realistic with a real-world market trading environment. Huddart (1999) employs the concept used by Huberman and Kandel (1994) by assuming perfect information about fund manager's type. This allows portfolio choice to be a signaling tool and reputation and fee represents the key underlying factors causing distortion. He concludes that the performance-based fee, precision of information, and most importantly high degree of risk aversion can sustain a separating equilibrium outcome. The inclusion of the risk aversion role and the simultaneous game setting are more realistic and not seen in many general models such as Scharfstein and Stein (1990), Chevalier and Avery (1999), Heinkel and Stoughton (1994) and Wang (2003).

CHAPTER 3

THEORETICAL MODEL

3.1 The Modified Model

This paper seeks to understand the distortions of fund manager's portfolio allocation behavior in the presence of reputation concern, given an exogenous signal from the capital control policies issued by the Bank of Thailand. We develop a theoretical two-period model based on that of Huddart (1999) and Wang (2003). In Huddart (1999), he finds that high degree of risk aversion and precision of the information extracted from the signal, as well as the certain threshold of fees imposed by fund managers all favor a separating equilibrium outcome where the informed fund manager engage in excessive risk-taking to differentiate themselves from the pool whereas the uninformed fund managers allocate all of the capital in the market portfolio.

Our paper adopted the concept of dynamic skill from Avery and Chevalier. However, the difference is that original model from Scharfstein and Stein (1990) assumes homogenous beliefs, smart managers tend to receive same truth, which favors "sharing the blame effect." Our model relaxes those assumptions, we allow for heterogeneous beliefs which can be due to several factors such as fund's style, biases, mandate, as well as institutional barrier. Although the concept developed in Chevalier and Avery (1999) is dynamic, the model framework has two main aspects that are not realistic. First, it is a sequential game where one manager move first whereas in reality most investment decision must be made instantaneously. Second, the model excludes the role of risk aversion whereas recent literature clearly supports the importance of risk aversion in financial decision-making.

To be more realistic, we adopt model setting of Huddart (1999), but transform the variable q in Huddart (1999) from a quantitative probability to a behavioral variable capturing endogenous fund manager' skill to be dynamic and achieve a separating equilibrium as a special case under the Huddart (1999) model. We support assumption cited by Huddart that both market and fund managers will learn information over time. This is documented in many papers as well. But we relax it in the sense that the investor and market will correctly update their belief regarding fund manager's ability after the end of period one, hence with a lag[34]. Also, we apply the same assumption that the market use optimal contract that enables both types to engage and not shirk, hence excluding the moral hazard problem. Therefore, the main distortions come from career concern of fund managers. Their decision will be governed by 1) the adverse selection setting and 2) how they actually interpret the signal (Signaling Hypothesis).

This paper's objective is to test whether a separating equilibrium can sustain given the asymmetric information between investors and fund managers. In order to arrive at the separating equilibrium outcome, we extend Huddart (1999) model in four ways. First, we posit that there is a time lag period prior to the initiation of the game. Such *wait-and-see strategy* adopted by fund managers is well documented in several

[34]The lag assumption is also documented in Huberman and Kandel (1994).

papers, including Forbes et al (2012). Secondly, we incorporate the *signaling hypothesis* into the model, which means fund manager's respond to any exogenous signals vary according to each fund manager's heterogeneous beliefs and fund-specific characters. Thirdly, we assume *endogenous fund manager's skill*, namely, fund managers who start off as bad manager can, over time, actually become a good fund manager once he has accumulated more experience. Lastly, we assume relative risk-aversion, which sustains only separating equilibrium outcome. Hence, this can be deemed as a special case to that of Huddart (1999). This paper extends Huddart's model in four ways as followed:

3.1.1 Wait-and-see Hypothesis

The first extension we make to the Huddart (1999) model is the incorporation of a lagged response before the two-period game initiates. The process, fund's mandate, and heterogeneous beliefs of fund managers' can potentially lead fund managers to engage in the wait-and-see strategy following the announcement of the capital control policies. Empirically, this lagged response among portfolio managers are well documented in several literatures[35]. Forbes et al. (2012) finds that most equity fund managers already have the information or signal and have priced them in their portfolio decision[36].

Furthermore, in our sample, all funds are emerging equity funds, with a mandate to generate long-term returns. Hence, each reallocation of the portfolio

[35] See Forbes et al. 2012, Ghosh et al. (2011), and Warnock (2011)
[36]EU 2014 survey also confirms that fund managers will only response to the difference between the priced-in information and actual policy conduct.

weight will have to reflect a fundamental shift in the long-term path. Once the current policy announcement is considered a surprise to the market, either in terms of a meaningful shift of policy stance in the future or the country's attractiveness as a whole, fund managers will have to initiate the reassessment process, which is time-consuming. Lastly, heterogeneous beliefs of fund managers in terms of signaling hypothesis also implies first-mover disadvantage. Hence, given that fund managers are risk-averse with career concern, they will rationally resort to a wait-and-see strategy.

3.1.2 Signaling hypothesis

Recent macroeconomic policy conduct employs communication channels as a new and powerful way to influence the financial market as part of the transmission mechanism. In this regard, the announcement of the capital control policies to be implemented in a country can have a substantial impact on the financial market. Since the capital control policies in the paper are initiated from the Bank of Thailand, we explore the behavioral pattern of fund managers among selected Asian countries. The signaling hypothesis posits that the respond of fund manager' following the capital control signal vary and can go both ways. Gelos (2011) and Broner et al. (2006) points to heterogeneous beliefs of fund managers. In interpreting the same signal, fund manager's preference, experience, and ability result in different response in terms of weight changes. Empirical evidence also supports the mixed response of fund managers[37]. Therefore, if the mixed support for signaling theories and the

[37]See Forbes et al. (2012), Bartolini and Drazen (1997), Gelos (2011), and Broner et al. (2006)

heterogeneous beliefs are valid, we should expect to see mixed signs in the coefficient of capital control variables.

3.1.3 The Endogenous Skill (Variable q)

The key difference is that towards the end of period one, Huddart (1999) excludes the possibility that after updating their beliefs, investors will end up with one fund, by having q as a probability that a proportion of the uninformed type will imitate the informed portfolio's composition. Here, our paper posits that we arrive at the same conclusion, not by having q as the random chance that uninformed fund managers will mimic the informed fund managers, but the random chance that a proportion of bad type will become a good/informed type in the next period. Consequently, as long as q is positive, rational risk-averse investors can still assign non-zero weight to the uninformed player. Hence, the game becomes a repeated game without a change in defined equilibrium outcome from Huddart (1999). Even though there is no change in the mathematical representation, the underlying mechanism differs substantially. Therefore, the re-interpretation of the q parameter as an endogenous skill accumulated overtime is the highlight of our model. The q parameter is transformed from a random probability in Huddart (1999) model to a behavioral variable capturing the dynamic nature of fund managers. This is a more realistic assumption in the real world market mechanism. Coupled with relative risk-aversion assumption ($\alpha > 0.5$), this will sustain the separating equilibrium outcome in the first period, which will be illustrated in the following section. The same setting then repeats again in the next period as the pool of fund managers develop over time.

3.1.4 Separating Equilibrium

We assume relative risk-averse ($\alpha < 0.5$ after normalized to 1), which sustains the separating equilibrium. Such a value is consistent with several empirical papers.[38]Moreover, development of new and sophisticated financial tools including short selling and leverage in trading also makes decisions by the good type more difficult to be mimicked; this strategy is well documented in Holmstrom's (2012) paper.

In Huddart's model, conditions supporting a pooling equilibrium have to enable the bad type fund managers to mimic the portfolio choice of the good type fund managers. His proposition 1 reveals that the bad type must be relative risk-loving in order to deem the gain from mimicking the aggressive portfolio of the good type more than offset the potential loss in fund flow at the end of period two. Therefore, the risk aversion assumption prevents them from mimicking the good type, excluding the pooling equilibrium outcome. In addition, although the bad type whose risk-aversion degree is not high, the advent of financially-innovative techniques, including leveraging, short-selling, various forms of derivatives, make the aggressive portfolio choice of good type fund managers more difficult to imitate. This is supported by Holmstrom (2012), who finds that short-selling and leveraging greatly improve the chance of a good type to stay differentiated in the market. Matsusaka (2011) also finds that performance-based compensation and the sufficiently more skilled of the good type result in a separating equilibrium outcome. Likewise, Wang 2003 concludes that precision of information, proportion of good versus bad type, as well as risk aversion

[38] See EU 2014 survey of portfolio managers, Huddart (1999), and Heinkel and Stoughton (1994)

of fund managers all contributes to the separating equilibrium outcome. In all, we have excluded the possibility that the bad type can and will mimic the good type in line with several literatures, which makes our hypothesis a special case of that of Huddart. In this regard, the signaling hypothesis is one of the subset of the separating equilibrium outcome, which represents a different pattern of investing in order to differentiate oneself from the pool.

3.2 The Model Setting

3.2.1 Assumption

We adopt the same key assumptions as in Huddart (1999) and Heinkel and Stoughton (1994), which assumes a perfect competition, where all fund managers act as price takers, move simultaneously when deciding their portfolio choices, with no possibility of collusion. Both fund managers and investors are risk-averse. There are two types of fund managers, good and bad, and the precision of information obtained from exogenous signal depend on fund manager's ability. Every fund manager has perfect information about his or her ability. In addition, although investor doesn't know the fund manager's type in period 1, they correctly learn, or update their belief, about the type of the fund managers over time (In this case, in period two) (Unlike Wang, asymmetric information setting dissolve after period one, as both parties correctly learn about the type in period 2.) Next, the fees paid to fund managers are exogenous, and is defined as a constant fraction of the asset under management.[39]Also, Performance-based fee or the like contract is a sufficient screening mechanism to enforce managers to put forth effort and reveal their type. As the fund managers will only get more wealth to manage for the next period only if they are perceived to be a smart one, there is an effect of reputation, which leads to distortions in portfolio choices chosen by each fund manager. Hence, career concerns or the possibility of being withdrawn from the fund at the end of the first period, not the moral hazard problem, is what drives the distortions in the model.

Apart from the abovementioned assumptions laid out in Huddart (1999), this paper further assumes that 1) the skill is *time-varying*, meaning a bad type can become a good type as they gain more experienced over time. 2) There is a *time lag* as managers engage in wait-and-see due to heterogeneous beliefs from the signaling hypothesis. Also, institutional barrier and fund's own style can result in different lag structure between each fund. And lastly, 3) we modify the assumption regarding the *risk aversion* of fund managers and investors to be more realistic in the sense that they are relatively risk-averse.[40]The inter-linkages between the signaling hypothesis and risk-averse-driven model results in a separating equilibrium condition, which will be illustrated in more detail in the following section.

Different assumptions underlying fund manager's ability can often lead to different outcomes. In Huddart (1999), perfect information results in the possibility of both a pooling, where bad managers tries to mimic the portfolio choice of a good

[39] Under contract theory papers, this type of fee is optimal and can eliminate most of the moral hazard problems, although the setting of assumptions underlying Chevalier 1999 are different
[40] Implying a coefficient of risk aversion $\alpha>0.5$

managers, or a separating equilibrium, where good managers are able to separate or differentiate themselves from the pool. On the contrary, imperfect information assumed by Wang (2003) leads to a pooling equilibrium outcome as a main result, with the possibility of a separating equilibrium where the precision of information and the proportion of good type managers enter the market. Also, another key difference are the factors used as screening mechanisms by investors. In Huddart (1999), portfolio choice can be used directly to gauge the ability of fun managers, and when weights differ for each type of manager, this reveal the true quality or type of a fund manager to investors. However, in Wang (2003), imperfect information requires investor to use fund performance as screening mechanism. Signal and outcome are assumed to be independent from each other.

3.2.2 The Setting

The main setting is the same as Huddart (1999). There are many small investors and fund managers, participating in a two-period game. There is an interaction between an investor who has to allocate his wealth to two fund managers, and the fund manager's investment strategies and effort used to influence investor's perception of his ability. There exists two types of investible assets, risky asset A, and riskless asset M. M is the market portfolio with no systematic risk. The risky asset pays either 2 or 0 with equal likelihood while the riskless asset pays the same amount invested. Both investors and fund managers have constant relative risk aversion utility functions for wealth as shown in equation 1. This assumption ensures that once given the same access to market information, investor's choice will be identical to that of fund managers. All parties' objective is to maximize their expected utilities at the end of the two periods. This paper focuses on the relative risk-averse case which leads to a separating equilibrium outcome[41]. Next, there is no cost to the fund managers to obtain the information from the signal,[42] hence the model distortion is driven by career concerns, and the moral hazard distortion is excluded[43]. In addition, initial wealth has no effect on all parties' behavior and hence it is normalized to be 1.0 at the beginning of the period.[44] No intermediate consumption is assumed.

a. Investor

Investors are constrained to investing all endowments in one of the two funds. They know for sure that one of the fund managers is uninformed or unskilled. Initially, the investor's wealth is assumed to be 1.0 and his prior belief regarding a fund manager's ability is that there is an equal chance that any can be a good type. However, at the end of the period one, investors will observe three things 1) portfolio weight chosen by the two fund managers and 2) performance of the two funds. The set of feasible actions by investor is to either do nothing, let the same proportion of his wealth be managed equally by both fund managers, or he can reallocate his wealth, switching away from one manager to the others. Given available information at the end of period one, investor's best response is to place the fund with the fund manager who performs best in the first period. Since a good type manager has better knowledge and skills, they will resort to sophisticated investment allocation by

[41]This is in contrast to Wang (2003) who assumes investor's prior and posterior beliefs are different.
[42] This is true under the context of the capital control policies by the BOT since all data are accessible, sufficient for the good type to correctly extract meaningful information from the signal.
[43]This is also consistent with many papers including Wang (2003), Heinel and Stoughton 1994),
[44]The irrelevance of initial wealth assumption is also employed in Wang (2003) paper.

assuming more risk and getting higher return by placing a positive weight in the risky asset A. Hence, Huddart (1999) assumes away irrelevant off-equilibrium cases by assuming that once investor observes that the w, or the weight placed on risky assets is zero, investors will immediately deem that fund manger as uninformed or unskilled or the bad type. This paper follows this assumption, and it is consistent with the additional contribution of the relative risk-averse. In general, risk averse agent are likely to place all of the capital in the market portfolio, given he knows that at the time he is the unskilled one and obtain only random noise from the exogenous signal of capital control.

Beginning with 1 in initial wealth, the investor's aim is to maximize his return from investment in the two funds. Let rho be the proportion of the wealth that investor places in fund manager I where I is the set of (uninformed (U), and informed (I) fund managers).

In the first period, γ is fixed at ½. By the end of the period 1, investor receives either $(1-f)R_{Ut}$ or $(1-f)R_{It}$ per one dollar that he invested. His wealth defined by $\tilde{\Gamma}$, therefore becomes:

$$\tilde{\Gamma} = \gamma_{I1}\tilde{R}_{I1} + \gamma_{U1}\tilde{R}_{U1}$$

Investor's objective is to maximize his expected utility in the two periods, hence maximizing the return per one dollar he invested in any fund manager, assuming he began by equally allocation to both fund at the beginning of period 1.

b. Fund managers

There are two types of risk-averse fund managers, the good one is informed (type I) since they can have access to meaningful signal regarding risky asset A's return. The good type will receive a meaningful signal from the exogenous capital control policies or in this case they have the ability to interpret the signal while the bad type cannot. The bad type of uninformed agent cannot either obtain or interpret the signal (type U) hence it is of no use to them. Hence, the uninformed fund manager will always invest in the market portfolio M in the absence of reputational effect. As the fund managers derives income from fee, f which is a subset of (0,1) as percentage of total asset under management, the uninformed managers will have the incentive to mimic the strategy of the informed fund manager since if they do not invest in the portfolio weight at all, investor will be able to gain meaningful information regarding their type from the different action, hence reputation concern leads the uninformed to mimic the informed or the good type by randomly choosing either $\widehat{\omega}$ or $\breve{\omega}$. Meanwhile, given investor's belief, reputation concern also lead the informed fund managers to try to differentiate themselves from the pool in order to reap most of the asset under management at the end of period one. In the Equilibrium section,

Our paper contributes by introducing the "endogenous skill", here the parameter q is transformed from a probability that uninformed will choose positive weight on risky asset in the hope to appear informed, into the probability that the fund himself actually become a good type over time as he become more experienced. This assumption is more realistic and the dynamic evolution while still resulting in the same equilibrium calculation as in Huddart (1999). Given that all parties are relatively risk averse, represented by α > 0.5.we will show that given relative risk-aversion and endogenous skill. This will result in the separating equilibrium where the uninformed fund manager finds that it is not worthwhile to mimic and the informed are able to differentiate themselves in period one, leading to a separating equilibrium outcome.

The fund managers' objective is to maximize his expected utility, which comes from maximizing his revenue. Fund manager's revenue is the product of fee, proportion of total wealth invested in each fund manager, total asset under management, and the return on funds. In period one each of the fund manager has wealth = 0.5 to manage whereas in period 2 each has asset $(1-f)\tilde{\Gamma}$ to manage. His expected utility is therefore the sum of 1) the fee earned in period one and 2) the return he earns on that fee income over the one period .Hence, he maximizes:

$$EU(f\gamma_{i1}\tilde{R}_{i1}\tilde{R}_{i2} + f\gamma_{i2}(1-f)\tilde{\Gamma}\tilde{R}_{i2}) = EU(f\tilde{R}_{i2}(\gamma_{i1}\tilde{R}_{i1} + \gamma_{i2}(1-f)\tilde{\Gamma}))$$

c. Signal

We assume the meaningful capital control signal perceived by skilled fund managers can be either good (G) or bad (B). In addition, the payoff structure of the risky asset A is assumed to be the same as that in Huddart (1999), where risky asset can either pay 2 or 0. Let p be the probability that the risky asset A will pay 2. The good signal (G) is the one that will cause the skilled fund managers to revise their belief of p to be 0.5 < p < 1, hence they will increase their portfolio weight ω allocated to the risky asset A, and vice versa. The contrary applies for bad signal (B).

3.2.3 The Timing

Unlike Huddart (1999), Heinkel and Stoughton (1994), and Wang (2003), we incorporate a time lag before the game begins, and there is no fixed lag structure for each fund manager.[45] Initially, there is an equal proportion of small investors investing in both funds. Then, before the portfolio weight decisions are made in period 1, good fund managers receive exogenous signal, with equal probability to be bad or good.

Upon receiving the signal, good type then revise their beliefs regarding the payoff of the assets, upward with $p > 0.5$ if signal is good and downward otherwise. In the mean time, uninformed or the bad type receive no meaningful signal. Then after returns are realized, investors then learn about type of fund managers and decide to reallocate their funds for period 2. Fund managers also get paid in the form of a percentage of total asset under management. Hence, for their next period payoff, all fund managers are concerned about their reputation, in other words, the perception of investors towards their ability. We assume here that all type want to maximize their utility function. Table 1 shows overall sequence of the game.

The key difference is that towards the end of period one, Huddart (1999) excludes the possibility that after updating their beliefs, investors will end up with one fund, by having q as a probability that fund will imitate. Here, our paper posits that we arrive at the same conclusion, not by having q, but by the fact that q here represents not the random chance that fund will mimic, but the random chance that a proportion of bad type will actually become good type in the next period. Therefore, even though

[45] This can be due to fund style, fund managers' own factor, and institutional barrier, also see Forbes et al 2012

there is no change in the mathematical representation, the underlying mechanism differs substantially. Coupled with risk-aversion $\alpha > 0.5$, this will sustain the separating equilibrium outcome, which will be illustrated in the following section. And then same setting repeat again in the next period.

Table 1: Timing of the Game

<table>
<tr><th rowspan="2"></th><th colspan="5">Time</th></tr>
<tr><th colspan="2">Period 1</th><th></th><th colspan="2">Period 2</th></tr>
<tr><td>Skilled fund manager</td><td>receives signal
and invests</td><td rowspan="3">return realized</td><td></td><td>receives
signal
and invests</td><td rowspan="3">return realized</td></tr>
<tr><td>Unskilled fund manager</td><td>invests</td><td></td><td>invests</td></tr>
<tr><td>Investors</td><td></td><td>reallocate
investment</td><td></td></tr>
</table>

Figure 1: Payoffs and The Belief Updating Functions

Utility function for wealth (both fund managers and investors)

$$U(W) = W^{\alpha}/\alpha \qquad \alpha < 1 \qquad (1)$$

Assets:

2 Assets

- Risky asset A, with payoff
  - 2 with probability 1/2
  - 0 with probability 1/2
- Riskless asset M, with zero return (return the same amount)

Signals: regarding payoffs of risky asset A

Let p be the probability that risky asset A will pays 2.

Good type

- G ⇨ Revise upward;
  - A pays 2 with probability p
  - A pays 0 with probability 1- p
- B ⇨ Revise downward;
  - A pays 2 with probability 1- p
  - A pays 0 with probability p

Bad type

- A pays 2 with probability 1/2
- A pays 0 with probability 1/2

3.2.4. Equilibrium

A separating equilibrium outcome[46]is achieved given reputation concern and relative risk-aversion of fund managers and investor. The first-best optimum without reputation-induced distortion can be obtained under the case of single period game or under performance-based fee contract. Since this paper excludes the issue of contract theory, we seek to demonstrate the separating outcome whereby reputation concern causes the good type fund manager to engage in excessive risk-taking in period one by over investing in the risky asset A.

To show this, two conditions must be satisfied. First, each type of fund manager must not find any other deviation more appealing than the equilibrium outcome. Hence, there is no possible deviation. Second, the investor's belief must not be objected by the intuitive criterion[47].

a. Single period equilibrium

Since the introduction of the endogenous skill and time lag before the beginning of the game doesn't result in a change in the overall calculation as that of Huddart (1999), we arrive at the same conclusion for the equilibrium in period one where the first-best optimum is attained. With the one-period time frame and the fee as a percentage of total wealth managed by each fund manager, this will result in the first best separating equilibrium outcome. The bad type fund manager will put all of his portfolio weight in the market portfolio M whereas the good type will choose portfolio weight w that maximizes the expected utility

[46]We follow the same methodology in arriving at the special separating case as depicted by Huddart (1999) where $\alpha > 0.5$.

[47] The intuitive criterion rules out unrealistic off-equilibrium outcome

$$EU(\omega A+(1-\omega)M)=pU(1+\omega)+(1-p)U(1-\omega)$$

First Order Condition:

$$\boxed{\omega^{*}=\frac{(H-1)}{(H+1)} \quad \text{where} \quad H=\left[\frac{p}{(1-p)}\right]^{\frac{1}{1-\alpha}}}$$

Hence, good type will choose w following good signal (G) and w following bad signal (B).

b. Two-period game equilibrium

For a two-period setting, we now arrive at the equilibrium by solving for the Baynes Nash Subgame Perfect quilibrium through backward induction method

a. Optimal investment outcome in period 2

In period 2, types in period 1 are revealed. Hence, here there is no incentive to both parties. Uninformed will always invest weight ω = 0 and go fully with market portfolio. The informed chooses ω^{G} upon receiving good signal, and ω^{B} upon receiving bad signal.

As portfolio weight will reveal type, in the next period, investors will decide whether to invest in bad type depending on their perceived value of q, or the endogenous reputation or skill. If q > 0.5, they will still have a positive weight in both funds, but if they perceive q < 0.5, here the current bad type will be either replaced by having investors investing all their wealth in the current good type, or choosing a new fund in the pooling whose performance and portfolio weight resembles that of the good type. Remark1: the fact that bad type might become more experienced in the next game makes investor retain a positive weight despite the fact that they are bad in period 1 of game 1.

b. Optimal investment outcome in period 1

As the intuitive criterion is constraint such that upon seeing the weight $\omega = 0$, investor will consider the particular fund manager as uninformed or the bad type, By backward induction, as market correctly learns about their type in period 2, best response in period one is to differentiate themselves as soon as possible. Next question is whether it is feasible. Proposition 2 shows conditions that determine a separating equilibrium.

Huddart (1999) shows that once all agents are relative risk-averse ($\alpha < 0.5$), there does not exist a sequential equilibrium that meets the Intuitive Criterion where both types of fund managers choose portfolio w with positive probability. This is shown by contradiction.[48] Hence, the bad type decide not to mimic by choosing $\omega = 0$ for certain in equilibrium. If the good type does not think there is a threat from mimicking, he will choose the ω equal to the first best. However, since there is reputation concern, the good type will invest more aggressively and go for $\omega = \hat{\hat{\omega}}$ upon receiving good signal G or $\omega = \breve{\breve{\omega}}$, which is sufficiently risky to discourage the unsophisticated bad type to imitate his strategies[49].

Proposition 2: Only separating equilibrium exists when $\alpha \in (-1, \frac{1}{2}]$ and $f > 1 - \frac{1}{\sqrt{2}}$

Upon receiving signal G and B, the good type fund manager will choose $\hat{\hat{\omega}} > \omega$ and $\breve{\breve{\omega}} < \breve{\omega}$ as portfolio weight for the risky asset, respectively. This is sufficient to discourage mimicking from the bad type[50].

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[48] More detailed mathematical proof can be found in the appendix.
[49] This leads to inequality 2 in the appendix.
[50] As the bad type will be indifferent between two choices. More detailed mathematical proof can be found in the Appendix.

Testable Hypothesis

Hypothesis 1: If wait-and-see hypothesis due to heterogeneous beliefs of fund manager is true, should see a lagged response following capital control.

Hypothesis 2: if signaling hypothesis due to heterogeneous beliefs of fund manager is true, we should see a mixed coefficient sign of capital control.

Hypothesis 3: If a separating equilibrium prevails, we should see a different pattern of response including independent lag structure, as well as signs.

CHAPTER 4

DATA AND METHODOLOGY

The dataset used in this study is a monthly time-series covering the period from 2003-2013, obtained from the Emerging Portfolio Fund Research (EPFR), Bloomberg database, CEIC database, the IMF's International Financial Statistics (IFS), as well as Bank of Thailan (BOT) and monetary authorities' websites in other selected countries.[51] To directly investigate fund manager's cross-country portfolio allocation behavior following the capital control signal by the BOT, a set of selected countries in the Asian region are included: Korea, Indonesia, Philippines, Malaysia, Taiwan, as well as Thailand. The criteria for selections are 1) significance in terms of market size and 2) geographical location.

4.1 Explanatory Variable: The Capital Control Indexes

The capital account policies in Thailand are suitable dataset to gauge fund manager's portfolio allocation behavior for several reasons. Firstly, there is a clear evolution and changes of controls, from a more relaxed to a well-balanced with wider tools used. Second, Thailand's equity market is highly correlated with other Emerging Asian Equity market, which is ideal to gauge cross-country allocation of fund manager as a reaction to exogenous capital control measures, as well as both direct and indirect

[51]The capital control indexes are constructed from a daily data and the average value is used to represent
the monthly data, same concept applies for the share of foreign gross purchase to the total stock value traded.

externality effect. Suwanpong (2012) finds that the Stock Exchange of Thailand, along with the Hang Seng, and FTSE Bursa Malaysia Kuala Lumpur Stock Exchange are accountable for the significant innovation spill-over to other markets. Lastly, the Stock market of Thailand (SET) is one of the main investment destinations for Emerging Market Portfolio. The market significance is reflected by a continued increase in the benchmark weight MSCI assigned to Thailand.[52] Therefore, the signal of capital control by the BOT should be closely watched and assessed by major Emerging fund managers. Table 1 in the Appendix graphs the rising trend of portfolio weight allocated by each fund.

To capture the fund manager's response resulting from the imposition of Thailand's capital controls, capital control indexes are constructed based upon the information from the BOT, including the press releases, speeches, as well as direct cooperation and regulation imposed directly by the BOT to commercial banks and financial institutions.[53] The goal of the index is to quantify the effect resulting from changes in the intensity of capital controls, and avoid problems faced by a mere use of a binary variable.[54]

Most papers featuring capital control indexes employ the annual dataset from the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Despite a comprehensive country and time coverage, such dataset cannot

[52]According to Forbes et al. (2012), most fund managers also compare their portfolio weight of a particular country to a benchmark weight, MSCI. Some funds that employ indexing strategies would adjust allocation within different asset classes to achieve overall weight that is tractable to the MSCI. However, MSCI are deemed merely as macro proxy.

[53]Data can be obtained from the BOT website, in the departmental internal order section.

[54]See Gallagher(2012), Schindler (2009), Miniane (2004), and Jongwanich and Kohpaiboon (2012) for more detailed application of the capital control indexes

capture variations of the capital control measures occurring during the year. As such, this paper employs a construction methodology consistent with that of Jongwanich and Kohpaiboon (2012), and Lee et al. (2011) in order to obtain the capital control indexes dataset in this study. Firstly, the measures are classified into measures relating to capital inflows, and measures relating to capital outflows.[55]

For each announcement, the measure is assigned a value of either -1 or +1; those that relax inflows or outflows or both, are assigned a value +1, and -1 otherwise. Next, the weight, ranging from 0 to 2, is assigned to each measure, with the goal to capture the varying intensity of measures in total and also by flow type. More importantly, the severity of the measure in terms of market perception is taken into consideration for the weight calculation.[56] Lastly, after multiplying the weights to each measure, the data are sequentially accumulated, which yields the final output; the overall capital control, control on inflows, and control on outflows indexes. The overall capital control index is also generated to capture the overall impact and serve as a useful benchmark. Figure 1 in the Appendix illustrates the evolution of the indexes from 2003-2013.[57]

Regarding the evolution of Thailand's capital control policies, the period 2003-2013 witnessed a dramatic shift from a focus on inflows restriction with outflow liberalization, to a more open and balanced stance while enhancing other aspects such as risk management and private sector's financial literacy. The period covered in this

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[55]Jongwanich and Kohpaiboon (2012) also distinguish between liability and asset side, and also among asset classes, but this paper will limit to only to indexes by gross flow type.
[56]This is consistent with Jongwanich and Kohpaiboon (2012), and Lee et al. (2011).
[57]The degree of restrictiveness can be directly compared with Schindler 2009 after restricting to 0 to 1, and flip sign

study can be divided into three main phrases. The first phrase is the pre-URR period, 2003-2006, with a surge in the capital inflows, especially in form of FDI and portfolio investment. Hence, as public pressure[58] and fear of baht speculation heightened, BOT began to impose restrictions on inflows since 2003. At the same time, the central bank also began to liberalize controls on outflows, with the hope to achieve a more balanced capital flow position. Secondly, there was a brief period of market turmoil with the sudden implementation of the URR in 2006. The signaling impact is deemed effectively at work during this period. Lastly, the post URR period until the present time is characterized by gradual lift of URR measures. All contingent measures werefully lifted in 2008. With reduced exchange rate pressure and more arrays of tools as a result of the enactment of the BOT Act in 2008, BOT focus more towards outflow liberalization measures, coupled with enhanced risk-management and financial literacy of the private sector. Table 2 in the Appendix presents key measures taken by BOT during 2003-2013.

4.2 Dependent Variable: Fund-level data

To explore fund manager's response, micro-level data is required. In this study, we obtain the fund manager's portfolio allocation data from the Emerging Portfolio Fund Research (EPFR) which features data on a fund-based basis.[59]Although the database is relatively new, it has become widely used and is the most comprehensive resource in terms of both time span and country coverage, especially

[58]Media at that time also stressed on large loss on BOT balance sheet as representing ineffective management.
[59] EPFR dataset has been widely used in a number of IMF, and ECB papers, some of which includes Forbes et al. (2012), Fratzscher (2011), and Duca (2012).

for the Equity funds.[60] As of 2014, EPFR data covers more than 16,000 equity funds, representing more than 260 billion US Dollars in total Asset Under Management. Fratzscher (2011) suggests the use of such dataset as it decently tracks the actual portfolio flow movement from the Balance of Payments data, despite representing only 5-20% of total market capitalization. For this study, we obtain three types of data from the EPFR, namely,the fund-level allocation in each country in form of a percentage weight of total fund's assets, the size of each fund in terms of total Asset Under Management (AUM), as well as fund flow data for portfolio investment during the full sample period.

To sort out final fund candidates, we employ a similar method as that of Forbes et al. (2012). The criteria used are 1) Relevance; funds need to have at least 5 % of their AUM in Thailand and 2) Significance; funds need to have at least 1 $ billion in AUM in Thailand in the end of 2013. As a result, the sorted funds would be the ones that have sufficient exposure and response to the implementation of capital control policies by BOT. Moreover, such fund must have data available in all the sample country; including Korea, Malaysia, Indonesia, Philippines, and Taiwan during the full 2003-2013 period. After applying all the criteria, we obtain dataset from 6 Emerging Equity funds. These includes 1) Aberdeen Emerging Markets Fund 2) Acadian Emerging Markets Portfolio 3) Baillie Emerging Markets Growth Fund 4) Genesis Emerging Markets Investment 5) Legg Emerging Markets Trust, and 6) Martin

[60] Mainly by the IMF, ECB, and several papers such as Forbes (2011), Fratzscher (2012b), and Miao (2012)

Emerging Markets Fund. Table 2 represents fund data in terms of size, AUM, and mandate.

Table 2: Fund Information

Fund	AUM	% Weight	Fund Mandate	Style
Aberdeen	2.2	10	Equity	Large cap
Acadian	2.7	8.7	Equity	Large cap
Baillie	1.1	7.5	Equity	blend
Genesis	1	5	Equity	blend
Legg	1	8.4	Equity	Large cap
Martin	1	10.8	Equity	blend

Note: % Weight is defined as the percentage weight of their AUM in Thailand. Large cap represents funds that mainly select large and stable stocks when making portfolio decision. Blend represents funds that select both large and medium stocks when making portfolio decision.

4.3 Model specification

Following the theoretical model in section 3, the paper attempts to test out three hypotheses as followed:

Hypothesis 1: If wait-and-see hypothesis due to heterogeneous beliefs of fund manager true, should see a lagged response following capital control

Hypothesis 2: if signaling hypothesis due to heterogeneous beliefs of fund manager is true, we should see a mixed coefficient sign of capital control

Hypothesis 3: If the mutually inclusive hypothesis prevails, we should see a different pattern of response including independent lag structure, as well as signs.

Building upon such underlying theoretical principles, we derive ARIMA equations for individual fund regression to capture individual heterogeneity and test out for fund's unique investment responses. We are interested in how changes in the intensity of Thailand's capital controls determine changes in foreigner's portfolio allocation across countries, aspect of which cannot be captured by a mere use of the binary variables,[61] we employ the first-difference format of the equation (1) to obtain our benchmark equation (4). This is the same specification as that of Forbes et al.(2012).[62] The same specification applies for when the total control indexes are replaced with inflow controls (equation (2) and (5)), and outflow controls (equation (3) and (6)), respectively.

4.3.1 ARIMA equations:

$$\omega_{ijt} = \alpha_{ijt} + \sum_{i=1}^{n} \gamma_i CC_{t-i} + \sum_{i=1}^{n} \beta_i \theta_{t-i} + \varepsilon_{ijt} \tag{1}$$

$$\Delta\omega_{ijt} = \sum_{i=1}^{n} \delta_i \Delta CC_{t-i} + \sum_{i=1}^{n} \varphi_i \theta_{t-i} + \mu_{ijt} \tag{2}$$

Where ω_{it} represents the share of portfolio allocated to country i by fund j at time t. CC_t^{TH} represents the level of Thailand's capital control indexes at time t. $\omega_{i,t-1}^{benchmark}$ is the weight of portfolio allocation that fund j allocates to the country initiating the capital control, Thailand, lagged by one period. $\theta_{i,t}$ is a vector of Autoregressive (AR) and Moving Average (MA) terms, and $\varepsilon_{i,t}$ is the error term. The same calculation applies for $CCinf_{t,}^{TH}$ Thailand's inflow controls index, and $CCoutf_{t,,}^{TH}$ Thailand's outflow controls index.

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[61] See Gallagher (2012)
[62] Forbes et al. (2012) tested on the Brazil's data from 2006-2011.

Later on, we also explore the indirect externality effect through two channels. First, the portfolio allocation change in the initiating country, Thailand, in the previous period can represent one of the indirect channels capturing the impact of the BOT capital control policies. Second, we incorporate the interaction term as the next indirect channel, the product of prior portfolio weight in Thailand and the capital control policies, both lagged by one period.

CHAPTER 5

EMPIRICAL RESULT

5.1 Tests

Before proceeding to the ARIMA model, we need to verify whether the model suffers from potential serious biases resulting from the presence of an endogenous variable or endogeneity bias. Since our model posits there is a time lag, all explanatory variables are lagged at least by one period. This excludes the potential bias resulting from simultaneity, which can lead to serious problem of inconsistent estimates. Regarding omitted or third variable bias, section V. and the robustness section will show that the degree of cross-equation correlation is relatively low across funds in each country and the Seemingly Unrelated Regression does not hold for this theoretical model.

5.1.1. Stationarity

In order to avoid the problem of spurious regression, we test for the stationarity property of each time-series before proceeding with the regression. An Augmented Dicky-Fuller test is performed for each country's dataset. Results from table 5 shows that all the data are I(1), hence becoming stationary after being first-differenced.[63]

[63]Some variables are level stationary I(0). See table 6-8.

Therefore, the coefficients obtained from our model specification do not suffer from the spurious relationship.

5.1.2. Heteroscedasticity and Autocorrelation

Although the presence of heteroscedasticity and autocorrelation still result in unbiased estimates, it is no longer the Best Linear Unbiased Estimates (BLUE) and will lead to invalid testing. Therefore, the White test for heteroscedasticity (with and without cross product terms) and the Breusch-Godfrey Serial Correlation LM test on residuals are performed for each ARIMA specification. The results shown in table 6 and 7 reveal that 19 out of 36 regressions suffer from either heteroscedasticity or autocorrelation. Therefore, we resort to the Heteroscedasticity and Autocorrelation Consistent (HAC) covariance estimatesto arrive at robust estimates and valid testing.[64] As a result of the HAC method, there are 2 funds where one of the coefficients of the lagged capital control terms becomes insignificant after the HAC standard errors are used. The rest of the regression estimates yield the same result in terms of sign and significance.

5.1.3. Normality

Although non-normality still results in unbiased estimates, the distribution of the residuals can indicate the degree of model misspecification. We report the histograms of all the regressions and perform the Jacque-Bera test to see whether the residuals are normally distributed. For Korea, all the regressions result in normally-

[64]The HAC method makes a correction directly to the standard errors.

distributed residuals. For other countries in the sample, there are on average four funds that have non-normal residual distribution. Although the cross-equation correlation is low[65], we resort to robust standard estimates for all regressions to ensure a valid testing[66]. All the results, including the Jacque-Bera statistics and histograms are presented in table 6.

5.1.4. Cross-Equation Correlation

Since a strong degree of cross-equation correlation can signify the misspecification of the model, potentially resulting from the omitted or third variable bias.[67] We have conducted the correlation analysis and report both the degree of correlation as well as the p-value resulting from all the pair-wise t-tests shown in table 7. The results show that only two funds are mainly responsible for the cross-equation correlation whereas for the remaining pair-wise correlation, the correlation is as low as 0.2 on averages. To completely resolve the issue, the Seemingly Unrelated Regression model as an alternative method will be discussed in the robustness section.

5.2 Regression Results

Following the ARIMA model specification described in section 3, we estimate the first-difference equation for the 6 selected funds in each country. The same steps are repeated for total capital control indexes, and for inflows and outflows control

[65]This implies there is no serious bias issue in the estimated coefficients resulting from non-normality in the residuals.
[66]For time-series regression, the HAC estimates of the standard errors are sufficient to resolve the issue.
[67]The condition where there are a number of variables that are causal to the dependent variable and also correlate with the explanatory variables but are not correctly specified in the model. This leads to inconsistent estimates.

indexes, respectively. The results are presented in table 8 with robust standard errors. The central results following our three priori hypothesis are presented in as followed.

5.2.1 ARIMA Results

The individual ARIMA regression results confirm the validity of the model as the main explanatory variables, the capital control indexes, are significant, in all countries. The different ARIMA specification also confirms individual heterogeneity across fund and across country, which also reinforces the signaling hypothesis and the mutually inclusive hypothesis as fund managers react to the exogenous capital control signal differently when devising portfolio allocation in different countries. Meanwhile, we observe that the indirect externality effect varies, both in degree and significance for each fund.

5.2.2. Wait-and-see Hypothesis

Regarding the timing, our paper relaxes the assumption and posits that there is a time lag before each fund manager engages in portfolio reallocation following the capital control signal from Thailand. If the wait-and-see hypothesis is valid, we should see a significant coefficient for the lagged capital control terms for each of the 36 regressions. This means that the fund managers do not immediately respond to the capital control signal, whether due to heterogeneous belief, institutional barriers, or fund's own styles. This is an extension to the Huddart (1999) model. The results are clearly in support of the wait-and-see hypothesis. As shown in table 8, the coefficients of the lagged capital control terms are significant for 31 out of 36 of the ARIMA regressions. The exception includes Aberdeen fund in Indonesia and Philippines, as well as Genesis, Legg, and Martin funds in Thailand, Taiwan, and Philippines, respectively. The direction of the response will be further discussed in the signaling hypothesis. From table 3, most of the funds respond within the first two quarters of the capital control signal.

The significance of ARMA terms in all ARIMA equations also support that there is inertia and idiosyncratic trend in investment behavior. This factor also contributes to the lagged response effect as fund managers would be unwilling to completely adjust their portfolio weight immediately following the capital control signal. The significance of the individual persistent trend is also reflected by the significance of the MA terms, which will be illustrated in more detail when the Seemingly Unrelated Regression models are tested in the robustness section.

5.2.3. Signaling Hypothesis

The priori signaling hypothesis that would support the separating equilibrium is one where the sign of the coefficients regarding the fund manager's response in terms of portfolio weight upon receiving the exogenous capital control vary from one fund to another, giving a mixed sign of coefficient across funds in one country. Any good type fund manager, upon obtaining the capital control signal, might respond by reducing the overall weight in the assets of sample country (deemed as risky asset A in Huddart (1999) model) whereas the other increases. Hence, if the fund manager decides to allocate more weight w into risky assets, they consider such exogenous signal as good (G). The contrary situation applies when they perceive the same signal as bad (B).

Results in table 3 support the signaling hypothesis. For every country, namely, Thailand, Korea, Malaysia, Indonesia, Philippines, and Taiwan, the 6 funds respond differently to the capital control signal. For example, Aberdeen fund decides to increase the allocated weight to Korea while Legg reduces. Notice that the time frame also varies, reflected by the different AR lag term. This will be further discussed in the Mutually Inclusive hypothesis in the following section.

Table 3: Signaling Hypothesis Results

Fund / Country	Aberdeen	Acadian	Baillie	Genesis	Legg	Martin
Korea	+(2)**, -(3)**	+(4)**	+(2)**	+(4)***	-(1)**, +(6)*	+(1)***
Malaysia	+(4)**, -(6)**	-(2), +(3)**	+(6)**, +(7)**	+(1)**, -(2)**	+(8)**	
Indonesia		+(1)**	+(3)**, -(10)*	+(4)**	-(6)**	+(1)***
Philippines		-(1)**,+(2)**	-(2)**, +(5)**	+(3)**, -(5)**	-(1)***, -(10)**	
Taiwan	+(2)*, -(4)**	-(8)**	-(1)**	+(3)**, -(5)**		+(2)**, -(3)***
Thailand	+(10)**	-(1)**,+(3)*, -(4)**	+(1)**		+(4)**	+(1)**, +(4)**

Note: The number in the bracket represents the significant lagged capital control term for each ARIMA regression and the coefficient sign is presented in front of the lagged terms.
*, **, ***Represents significance at 10%, 5%, and 1%, respectively.

5.2.4. Separating Equilibrium

The main point of the paper is to demonstrate that a separating equilibrium, one where good type fund managers are able to differentiate themselves from the pool by following a more independent an aggressive pattern of portfolio investing can prevail. This is radically different from many herding papers which concludes that the asymmetric information setting between the investor and fund managers coupled with career concern will usually result in a pooling equilibrium whereby the good type fund manager choose to ignore the exogenous signal and herd with the market.

The results from table 9, as well as the justification of hypothesis 1 and 2 support the separating equilibrium outcome. Obviously, there is a significant and independent lag structures across fund and country in the 36 funds presented. This is reflected by the different ARMA specification for each fund in the 6 countries. The rigorous individuality is further affirmed in the robustness section. Table 8 in the Appendix presents all the regression results. In addition, the signaling hypothesis shows that the direction can go both ways, depending on individual fund manager's interpretation of the capital control signal. Meanwhile, timing also differs, confirming the wait-and-see hypothesis and an independent lag structure. Hence, the valid hypothesis 1 and 2 represents a different investing pattern which corresponds to the separating equilibrium outcome. Meanwhile, regression results confirm the presence of indirect externality effect, but it varies in terms of significance by fund. This further reaffirms the heterogeneous pattern.

5.3 Robustness Test

The Seemingly Unrelated Regression (SUR)

Throughout the model, the individuality of the ARIMA regression captures the heterogeneity of investment pattern across fund and country, which confirms the separating equilibrium whereby fund manager follows a different and independent pattern of portfolio allocation following an exogenous capital control signal. From section 4.1, we observe the presence of cross-equation correlation in residuals. With an attempt to test out alternative hypothesis and increase the efficiency of the model, we also test the theoretical framework using the Seemingly Unrelated Regression with Autoregressive (AR) specification as the empirical tool. The results depicted in table 9 reveals that the SUR model does not hold, which in turn reaffirms the heterogeneity nature of the results, also through the importance of the MA terms that capture fund-specific persistent investment pattern.

One plausible explanation is the low degree of cross-equation correlation, which renders low marginal benefit from an attempt to increase estimation efficiency via the use of SUR. Here, the trade of in harnessing the error terms is explanatory power versus efficiency. With a strong degree of individual heterogeneity, using the Moving Average (MA) terms to capture the persistent individual trend renders meaningful results while the SUR does not provide a significant explanatory power through increased efficiency. This also eliminates much of the concern on omitted variable bias. Given the theoretical framework and empirical goodness of fit, the ARIMA model is the one that can capture the varying investment pattern.

CHAPTER 6

CONCLUSION

This paper builds on earlier reputation model and investigates fund manager's response when given an exogenous signal, which, in this case, is the capital control signal by the Bank of Thailand (BOT).In so doing, this paper seeks to test out three hypotheses 1) the Wait-and-see hypothesis 2) the Signaling Hypothesis, and 3) Separating Equilibrium. We build on earlier signaling model of Huddart (1999) and incorporate the three aforementioned hypotheses into the model using a novel fund-level dataset by the Emerging Portfolio Fund Research (EPFR)[68] dating from 2003-2013 in six Emerging Asia countries; Korea, Malaysia, Taiwan, Indonesia, The Philippines, and Thailand. Also, we construct a higher frequency capital control index by flow types in order to further differentiate the resulting potency of control measures. In order to capture idiosyncratic pattern in fund manager's response, we employ the ARIMA model specification for each regression, and later on modified it to include indirect externality effects.

The result confirms that a separating equilibrium outcome in portfolio investment patterns of mutual fund managers can sustain following a common exogenous capital control policy signal. In this regard, good fund managers will try to

[68]This dataset is by far the most comprehensive resource for portfolio investment data, used in several research works by the International Monetary Fund, European Central Bank, and academic institutions.

separate themselves from the pool by taking excessive risk through their portfolio choices. In our sample, the individualistic investment pattern varies both by fund and by country, representing a separating equilibrium outcome. For example, Aberdeen fund manager tends to respond to BOT capital control signals within the first two months when making portfolio allocation in Korea. However, it can take them as long as ten months to make a significant shift in portfolio weight in Thailand. In addition, in the following two months after BOT issued the capital control policies, Acadian fund manager increases their portfolio weight to the Philippines whereas Baillie fund manager decreases theirs. This result is in support of the signaling hypothesis, where fund managers respond differently to capital control signals due to their heterogeneous beliefs. Also, it takes all the fund managers at least one month to make a noticeable change in portfolio allocation following BOT capital control signals, confirming the wait-and-see hypothesis.

All the findings shed light on how macroeconomics policy results in idiosyncratic response of individual agents that can be used to assess potentially distortion to the overall welfare. Future research includes an examination of the role of reputation effect in determining the separating equilibrium outcome, which requires a construction of fund manager’s reputation index. Also, overall distortions as a result of the fund manager’s reputation effect should also be investigated.

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APPENDIX

Table 4: Key Capital Control Measures Taken by BOT from 2003-2013

Date	Capital Control Measure
Sep 2003	• Impose a limit for the amount of Thai Baht that domestic financial institutions can borrow from non-resident without underlying trade and investment value to only up to 50 million baht per entity. The rule applies to all transactions with maturity of less than three months.
Oct 2003	• Impose a limit for the daily outstanding balance of the Non-resident Baht Account to a maximum of 300 million baht per non-resident. But exceptions can be made on a case by case basis by the BOT.
Nov 2006	• Strongly urge domestic financial institutions not to issue and sell baht-denominated bills of exchange to non-residents for all maturities.
Dec 2006	• Prohibit financial institutions from engaging in any transaction involving a sell and buy back for all types of debt securities at all maturities. • Prohibit financial institutions from buying and selling foreign currencies with non-residents or to credit or debit the Non-resident Baht Accounts for the settlements relating to investments in government bonds, treasury bills or BOT bonds with maturity of less than three months. • Limit the baht borrowing transaction permissible to only for transaction with maturity of at least six months. • URR: Require an upfront 30% deposit of foreign exchange with BOT for all foreign transactions, except those related to trade in goods and services, repatriation of investment abroad by residents, and FDI. The full deposit amount will be returned after funds have remained within Thailand for more than one year; otherwise, only two-thirds of the amount will be refunded.
Jan 2007	• Limit the end-of-day balance for SNS account to a maximum of 300 million baht for non-resident
Nov 2007	• Cut the allowable ceiling for foreign ownership for financial institutions to 49%, from 100%.

Date	Capital Control Measure
Feb 2008	• Revise down the limit for domestic financial institutions’ baht borrowings from nonresidents with no underlying trade or investment for all maturities to a maximum of 10 million baht outstanding balance per group of nonresidents. • Limit the maximum amount permissible for the provision of Thai baht liquidity by domestic financial institutions to nonresidents with no underlying trade or investment to no more than 300 million baht outstanding balance per group of nonresidents.

Table 5: Results from the Augmented Dickey-Fuller Test

ADF Test statistics	Thailand	Korea	Malaysia	Taiwan	Indonesia	Philippines
Aberdeen	-7.656***	-10.187***	-17.809***	-9.162***	-15.548***	-9.162***
Acadian	-8.542***	-10.814***	-10.704***	-9.888***	-10.719***	-9.888***
Baillie	-13.972***	-13.394***	-8.064***	-7.765***	-9.990***	-7.765***
Genesis	-11.140***	-10.347***	-13.286***	-9.995***	-11.434***	-9.995***
Legg	-9.940***	-10.866***	-12.932***	-9.667***	-10.832***	-9.667***
Martin	-18.554***	-18.554***	-16.838***	-13.164***	-12.460***	-13.164***
CC	-8.365***					
CCINF	-10.175***					
CCOUTF	-9.505***					

Note: MacKinnon (1996) one-sided p-values are used.
*, **, ***Represents significance at 10%, 5%, and 1%, respectively, meaning data series are first-differenced stationary.

Figure 2.1: Fund Allocation (Korea)

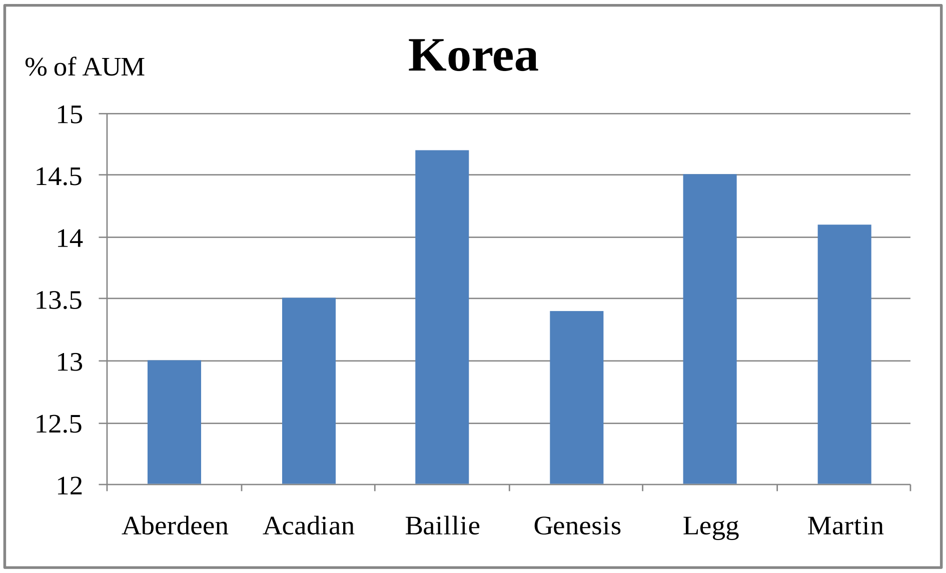


Figure 2.2: Fund Allocation (Malaysia)

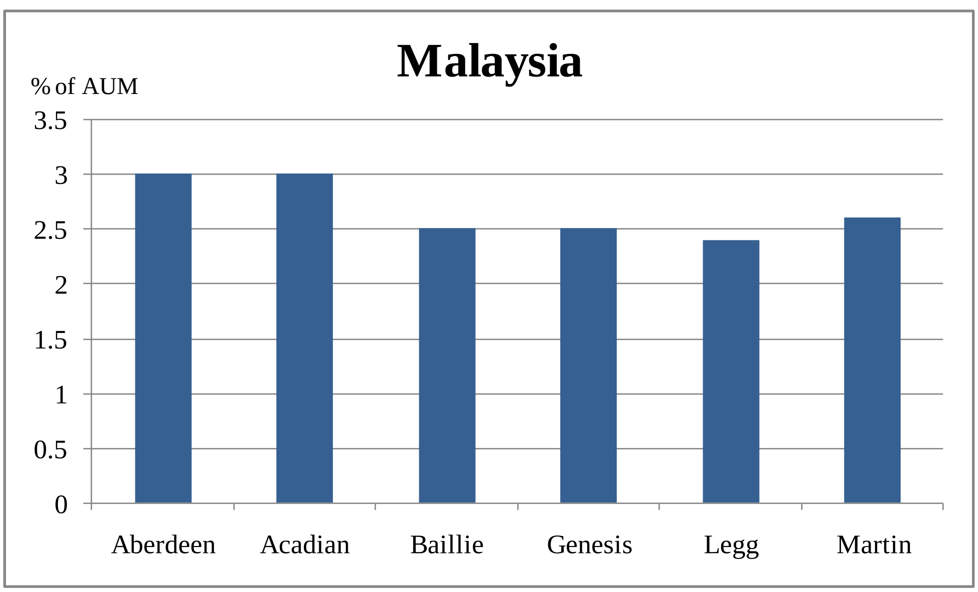


Figure 2.3: Fund Allocation (Philippines)

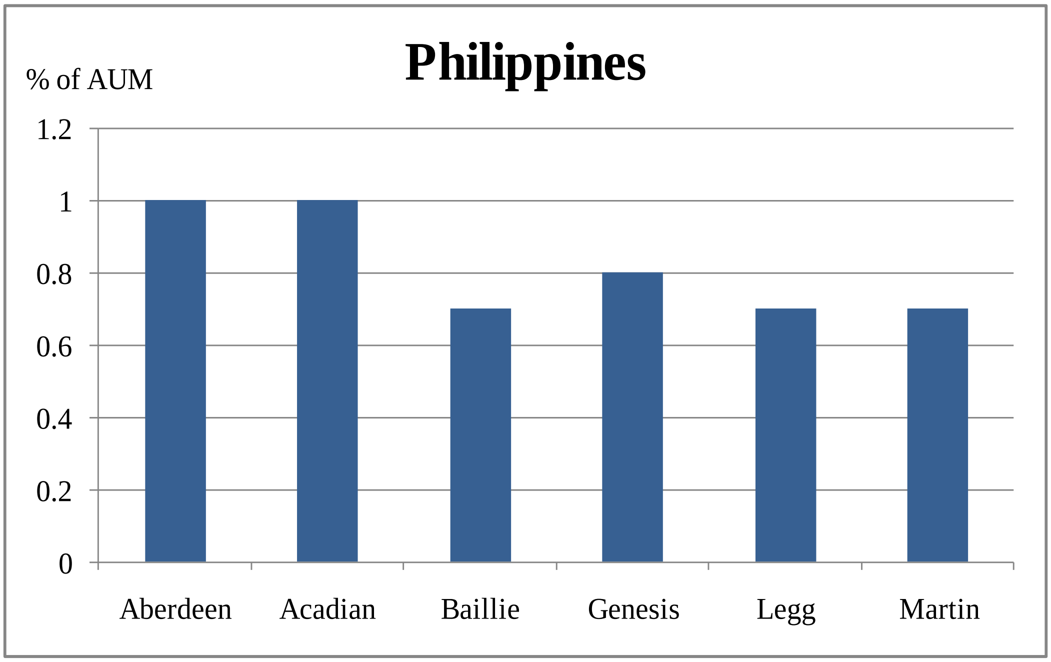


Figure 2.4: Fund Allocation (Indonesia)

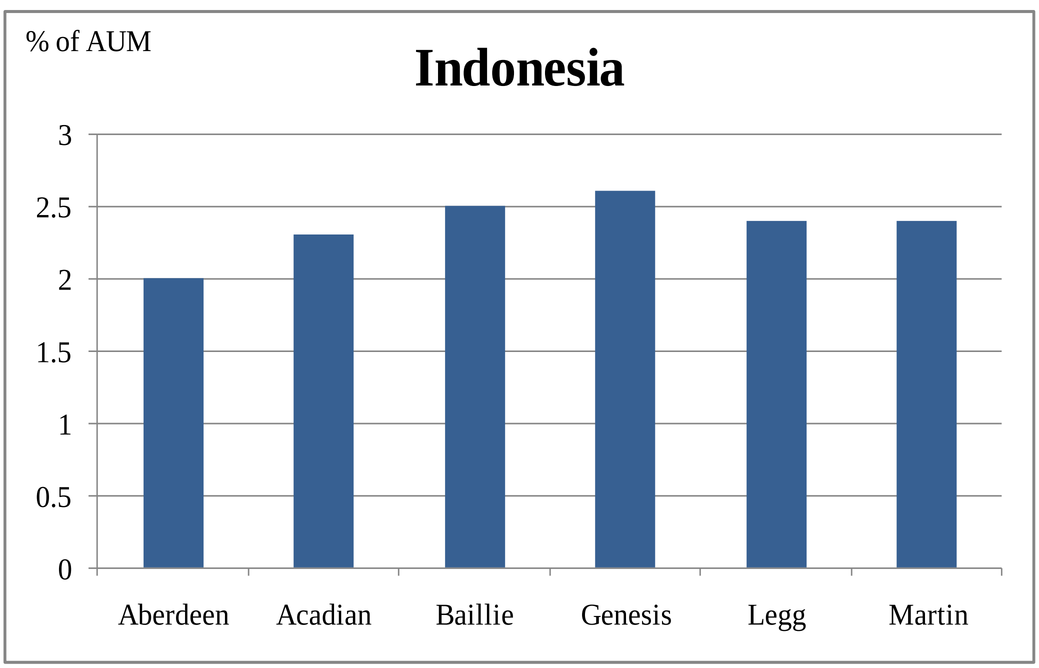


Figure 2.5: Fund Allocation (Taiwan)

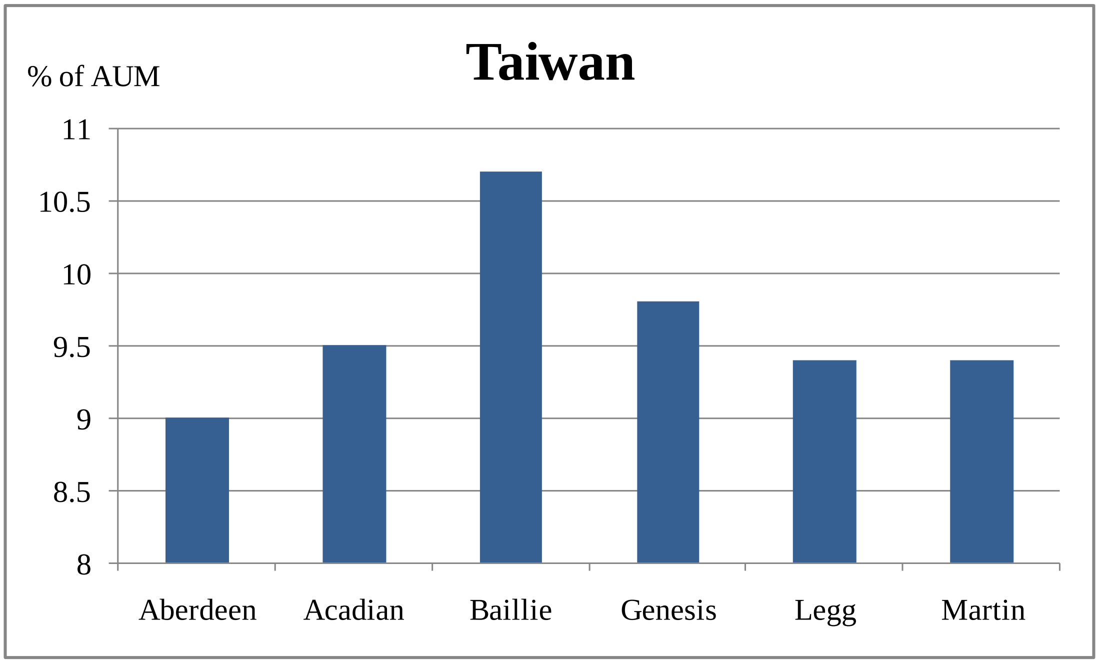
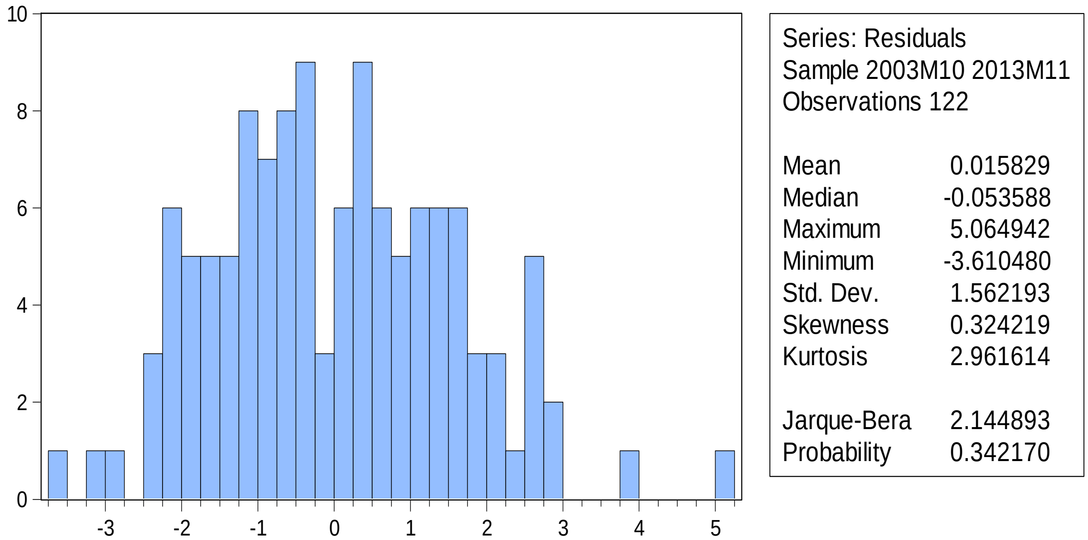


Figure 3.1: Histograms and Jacque-Bera Normality Tests Thailand)
Acadian

Legg



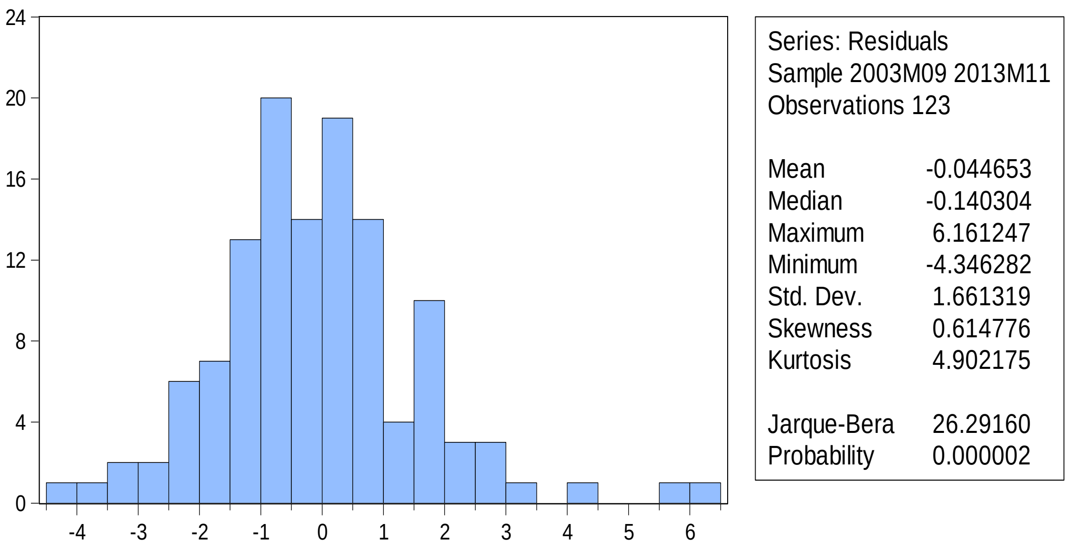
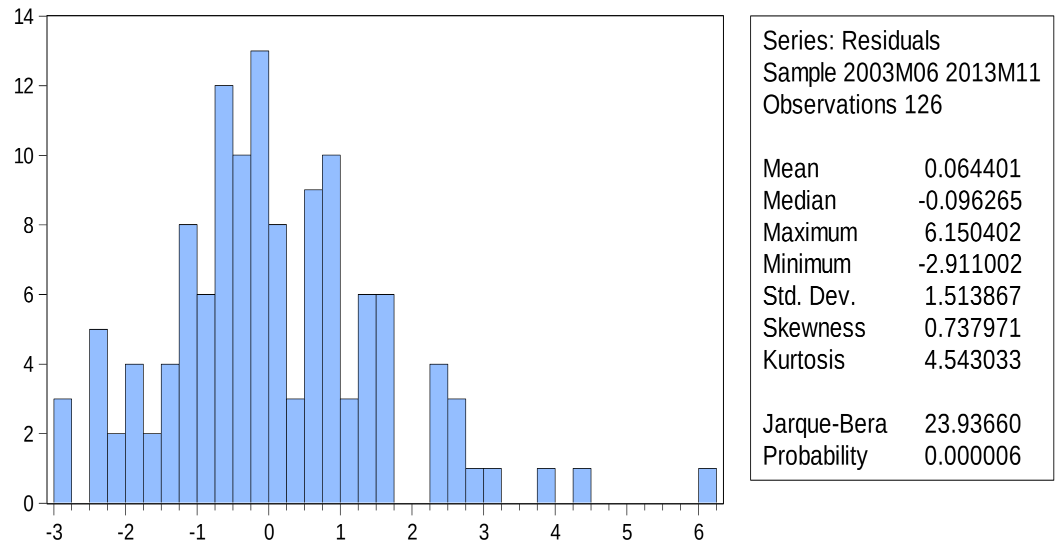


Figure 3.1: Histograms and Jacque-Bera Normality Test (Thailand) (Continued)

Martin



Aberdeen

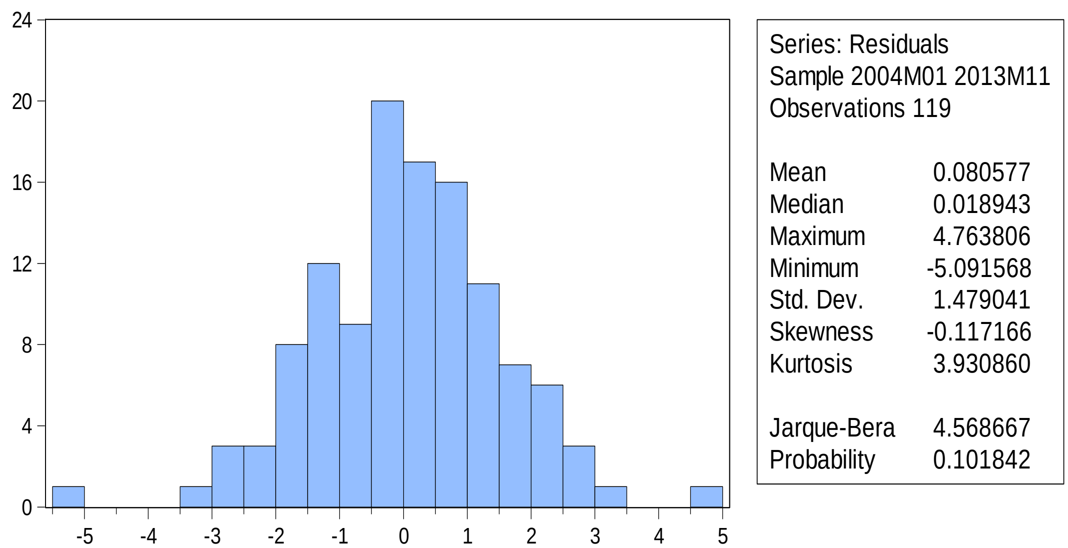
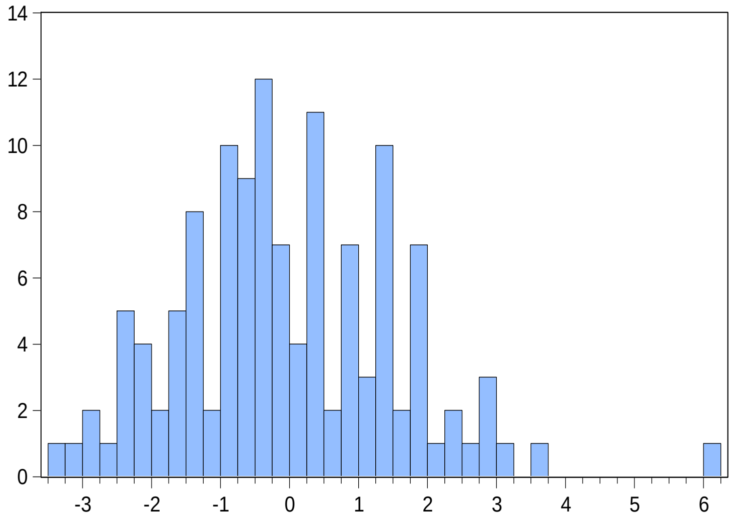


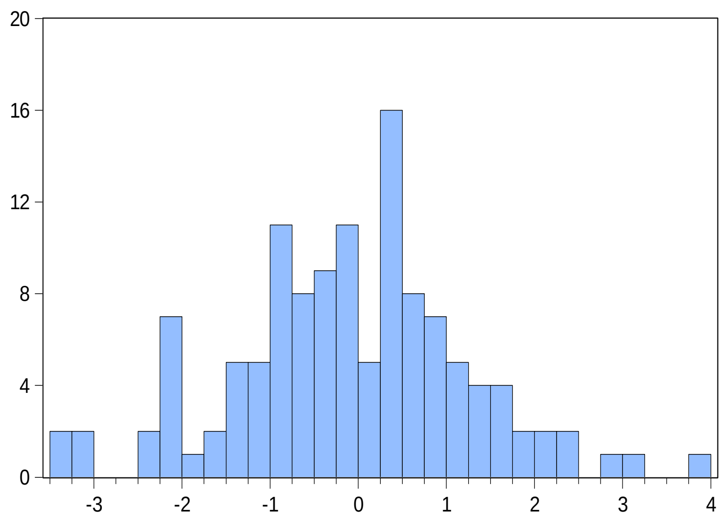
Figure 3.1: Histograms and Jacque-Bera Normality Test (Thailand) (Continued)

Genesis



Series: Residuals	
Sample 2003M07 2013M11	
Observations 125	
Mean	-0.029234
Median	-0.239095
Maximum	6.137986
Minimum	-3.455112
Std. Dev.	1.580020
Skewness	0.527102
Kurtosis	3.847716
Jarque-Bera	9.531092
Probability	0.008518

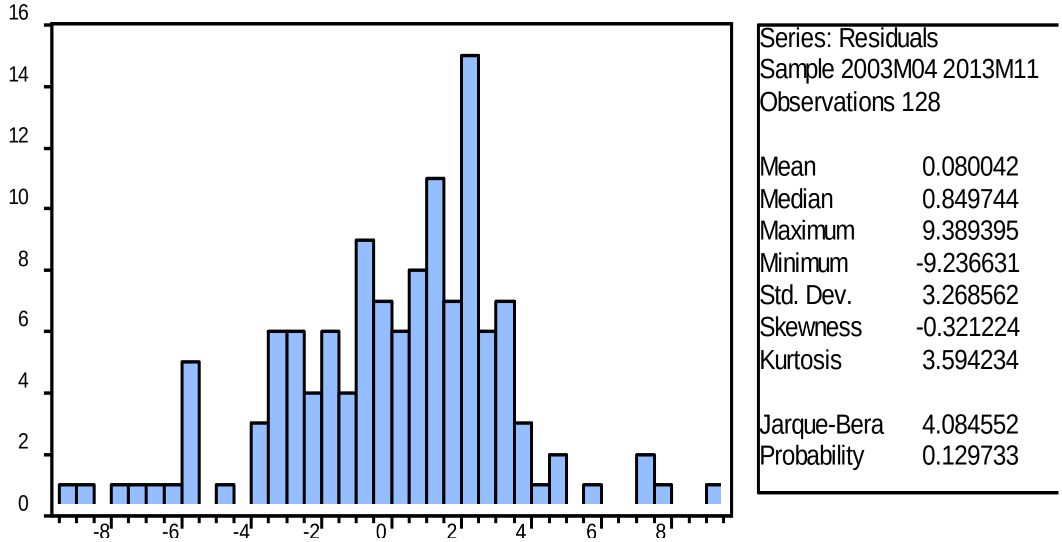
Baillie



Series: Residuals	
Sample 2003M09 2013M11	
Observations 123	
Mean	-0.095242
Median	-0.033056
Maximum	3.773646
Minimum	-3.339485
Std. Dev.	1.314203
Skewness	-0.021906
Kurtosis	3.247676
Jarque-Bera	0.324222
Probability	0.850347

Figure 3.2: Histograms and Jacque-Bera Normality Test (Korea)

Legg



Baillie

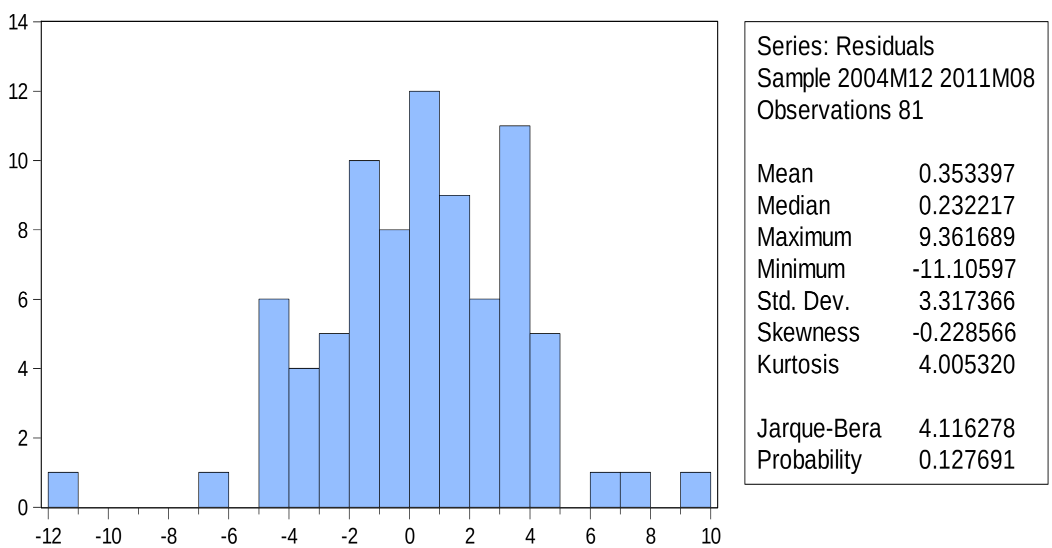
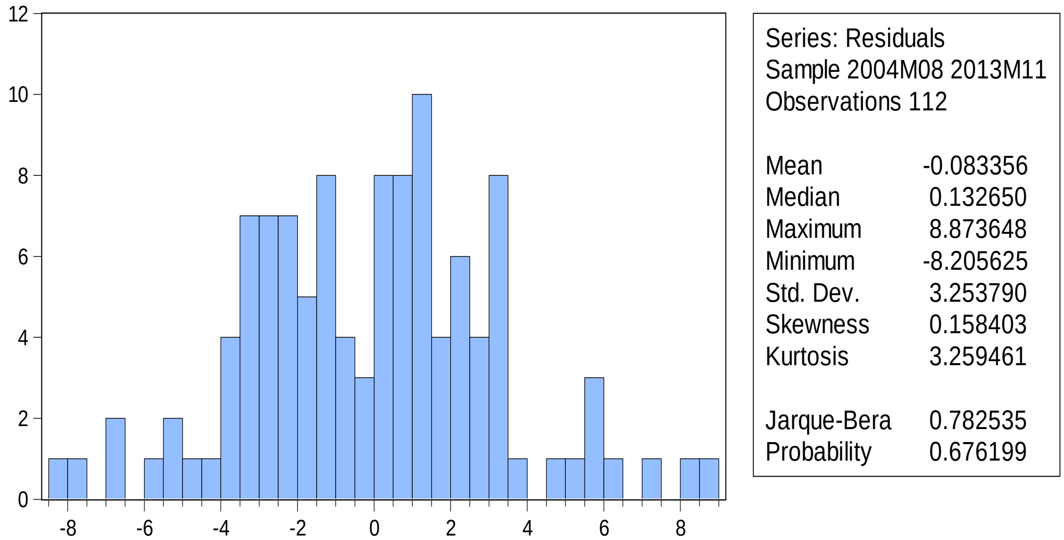


Figure 3.2: Histograms and Jacque-Bera Normality Test (Korea) (Continued)

Genesis



Aberdeen

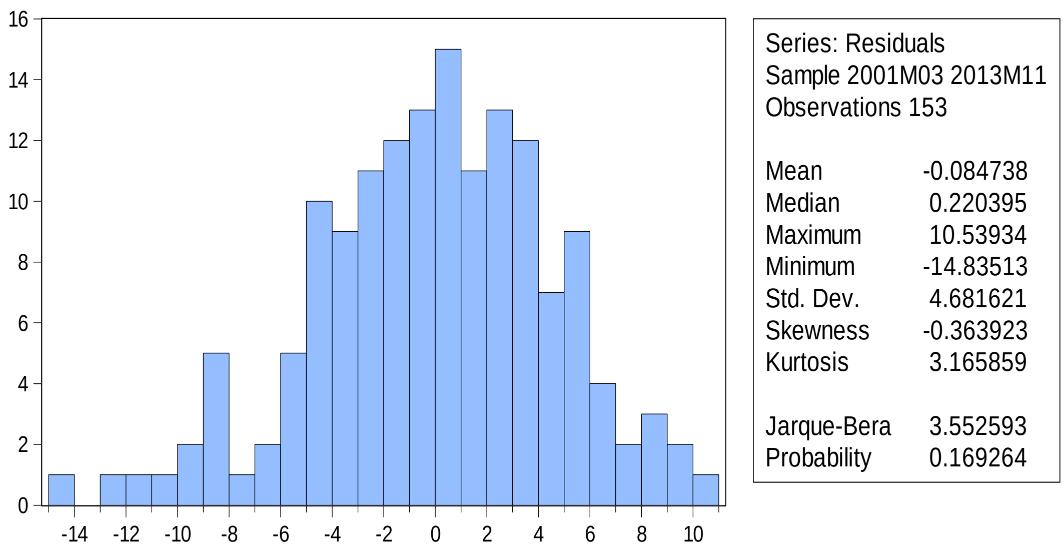
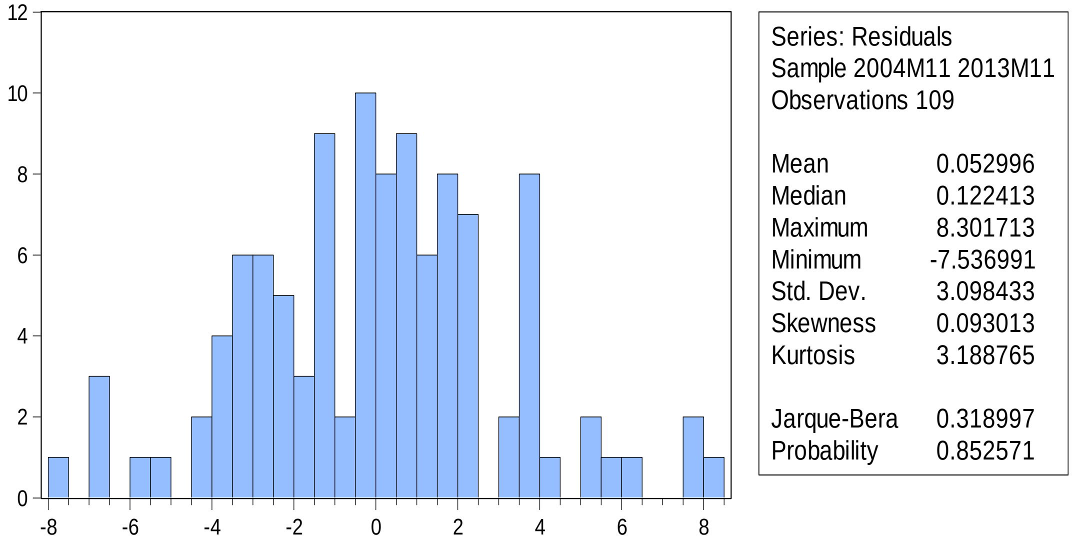


Figure 3.2: Histograms and Jacque-Bera Normality Test (Korea) (Continued)

Martin



Acadian

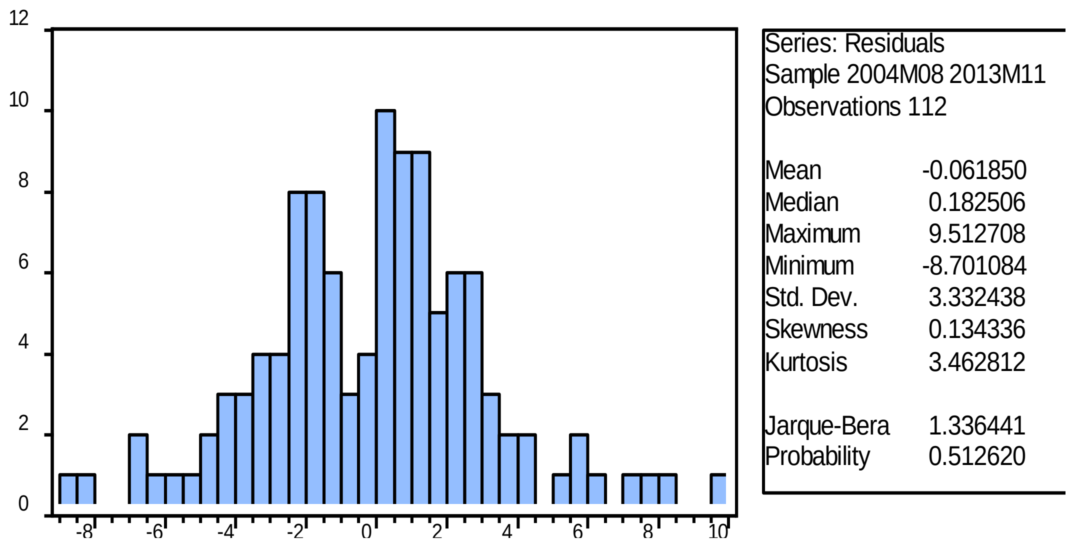
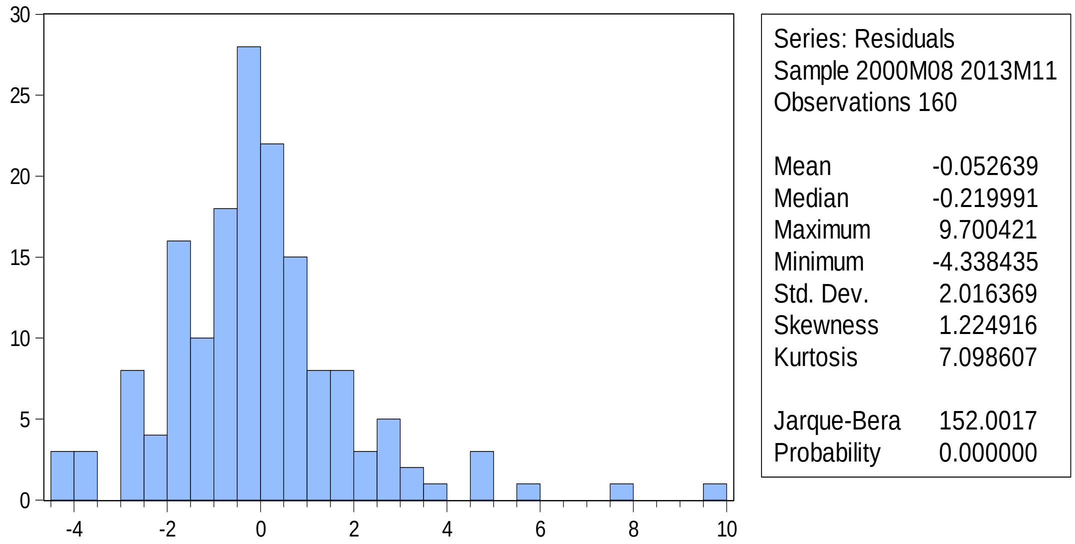


Figure 3.3: Histograms and Jacque-Bera Normality Test (Malaysia)

Aberdeen



Acadian

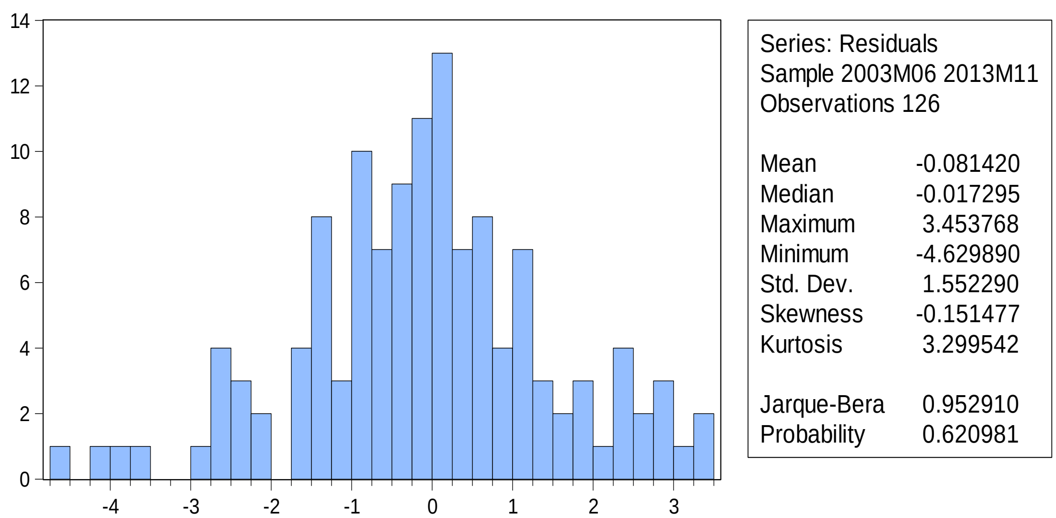
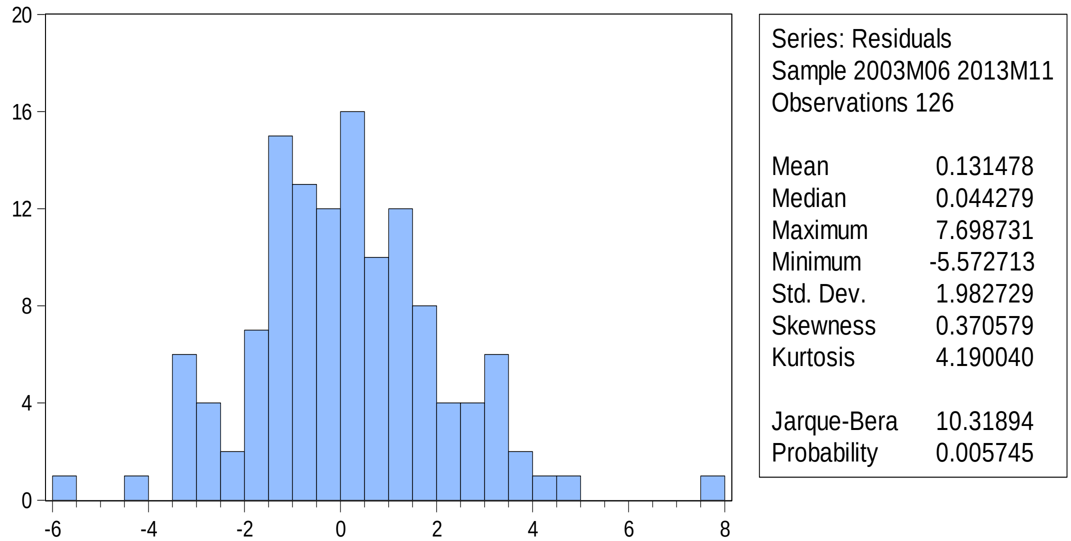


Figure 3.3: Histograms and Jacque-Bera Normality Test (Malaysia) (Continued)

Genesis



Martin

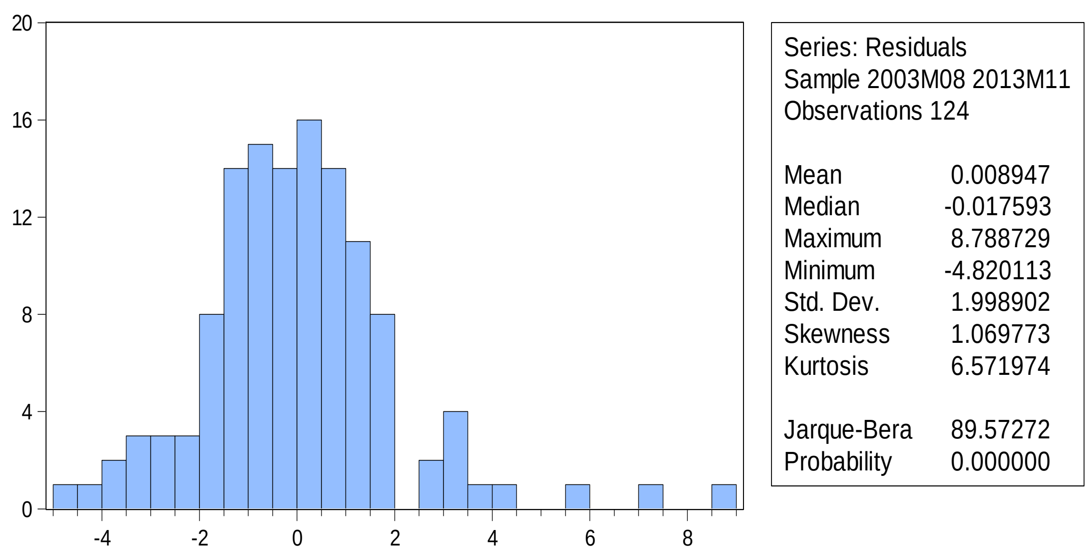
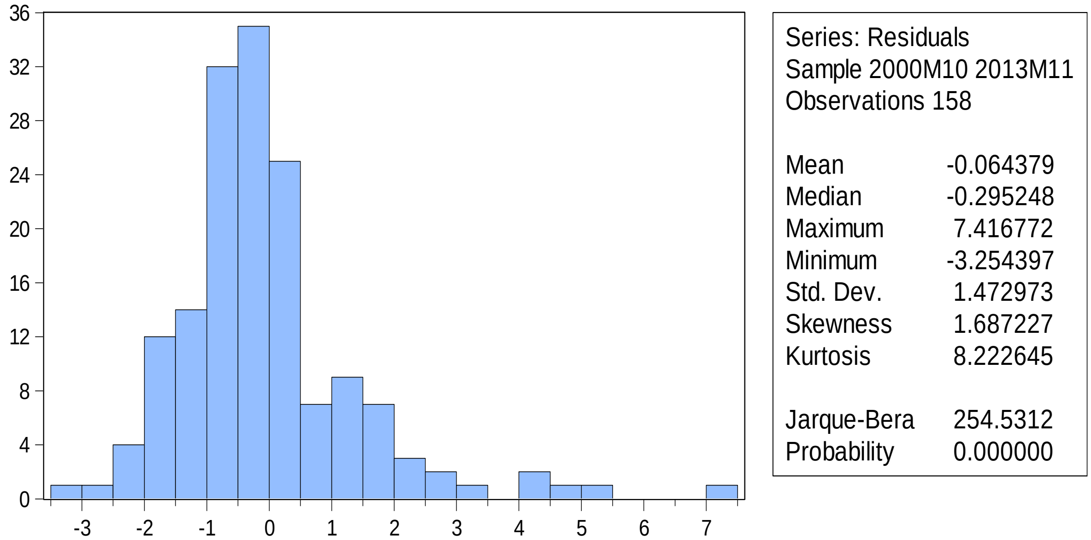


Figure 3.3: Histograms and Jacque-Bera Normality Test (Malaysia) (Continued)

Baillie



Legg

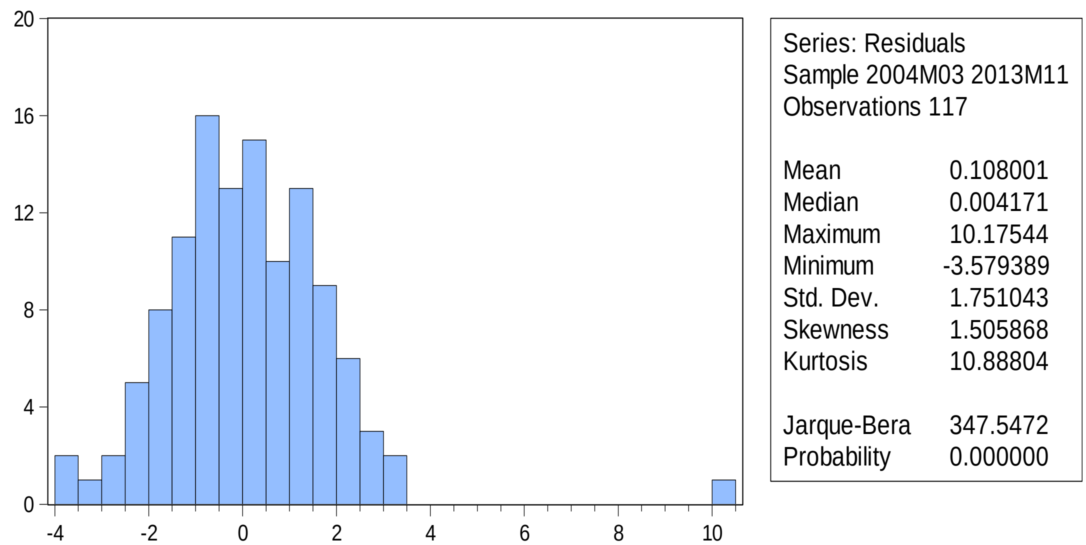
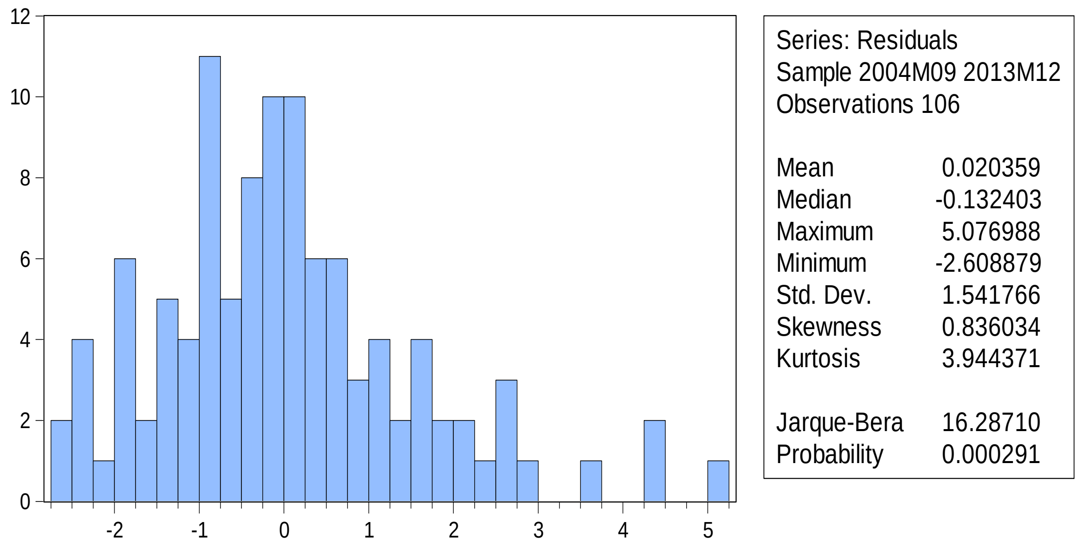


Figure 3.4: Histograms and Jacque-Bera Normality Test (Philippines)

Aberdeen



Acadian

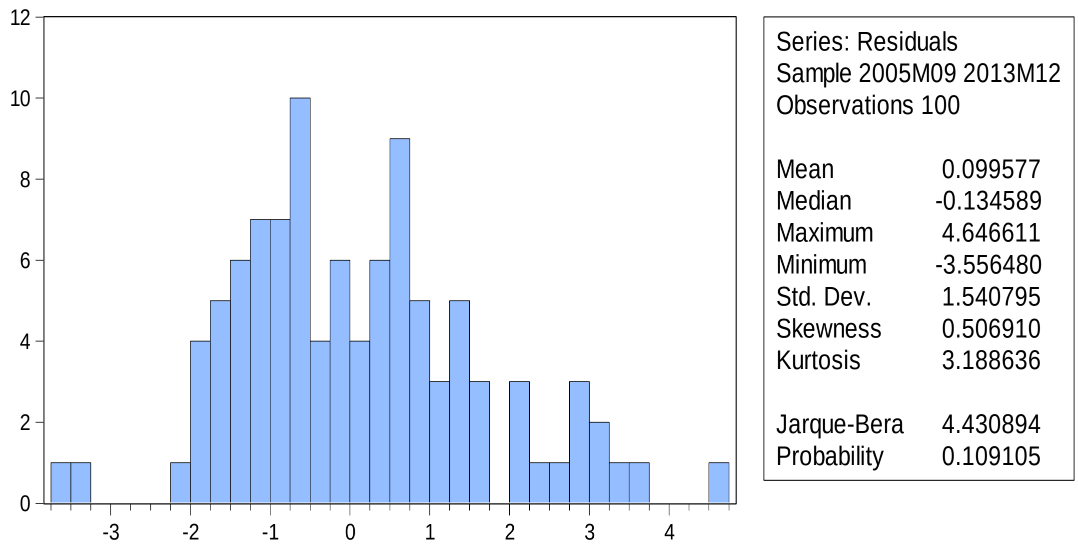
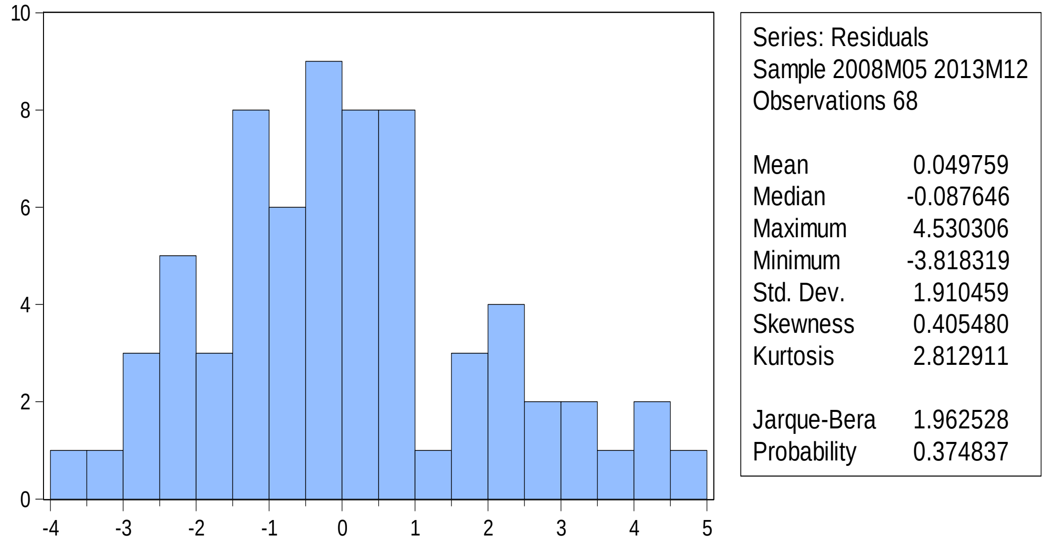


Figure 3.4: Histograms and Jacque-Bera Normality Test (Philippines) (Continued)

Genesis



Legg

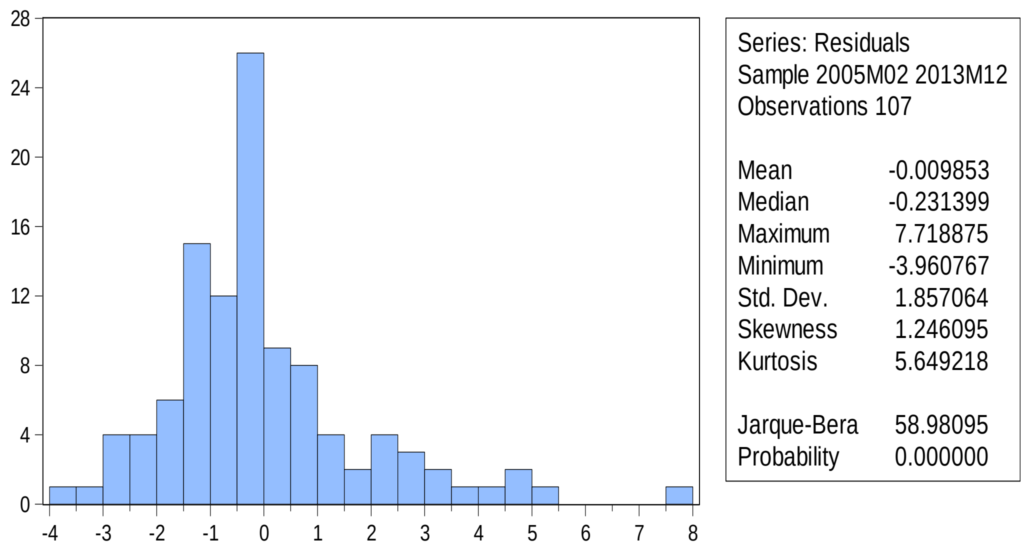
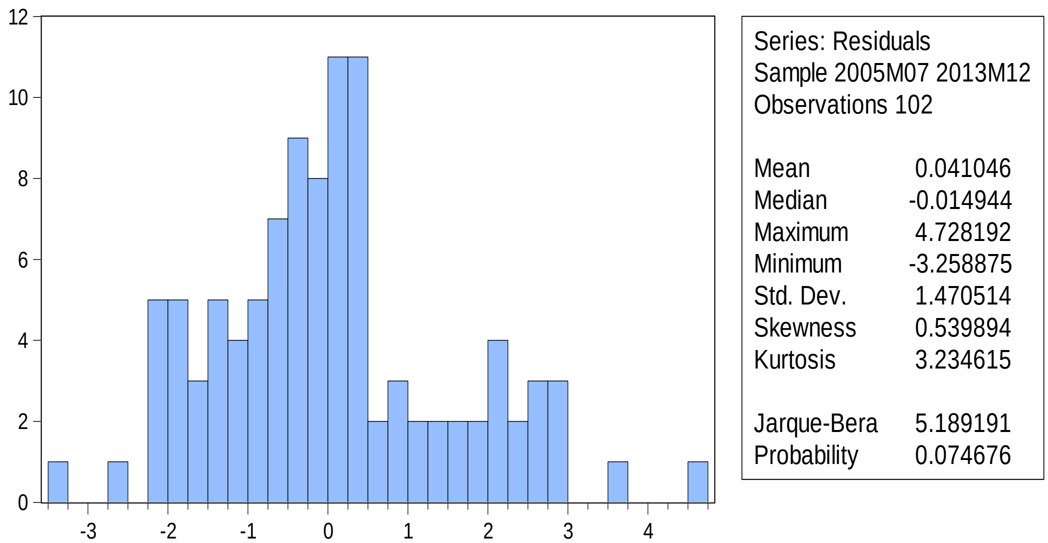


Figure 3.4: Histograms and Jacque-Bera Normality Test (Philippines) (Continued)

Martin



Baillie

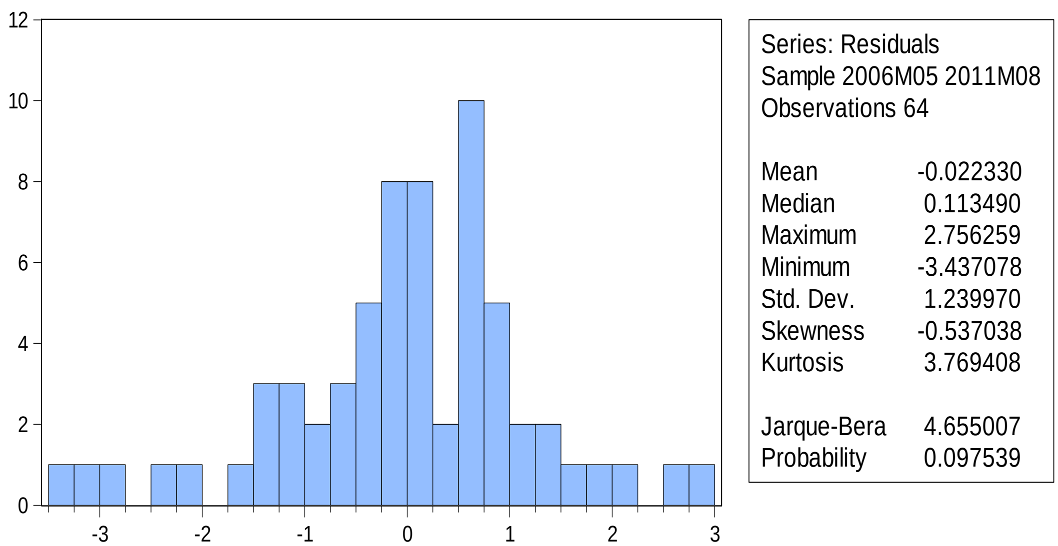
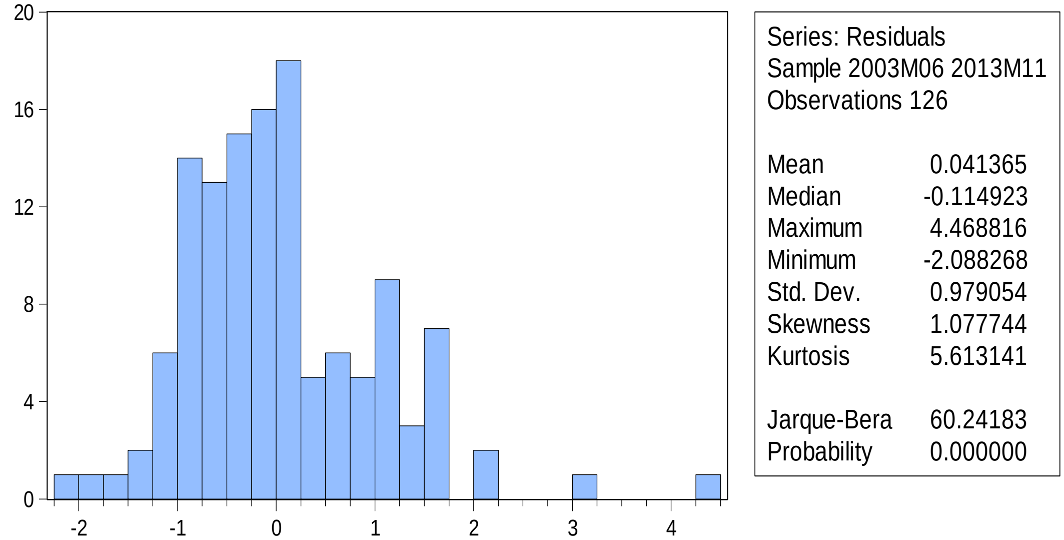


Figure 3.5: Histograms and Jacque-Bera Normality Test (Taiwan)

Aberdeen



Acadian

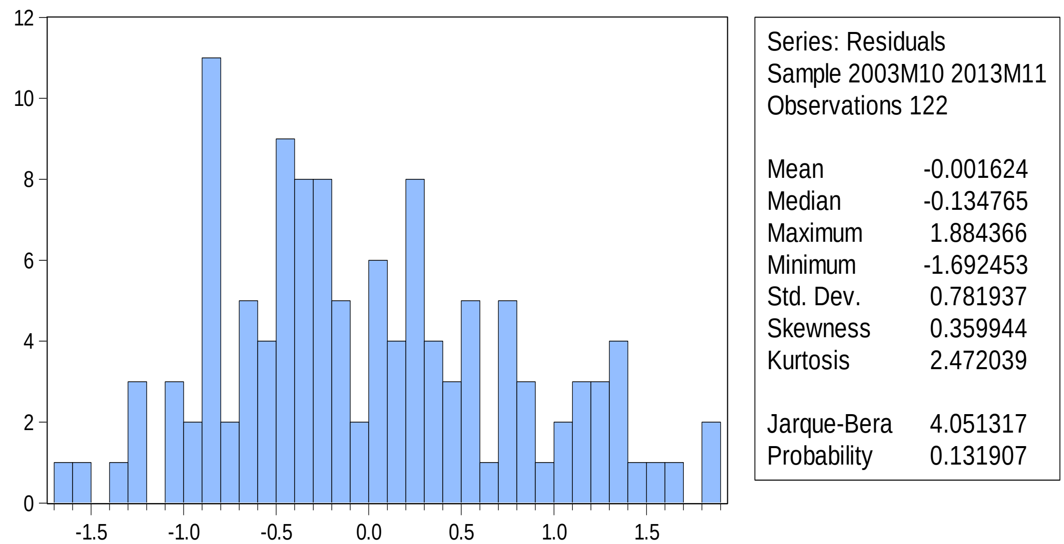
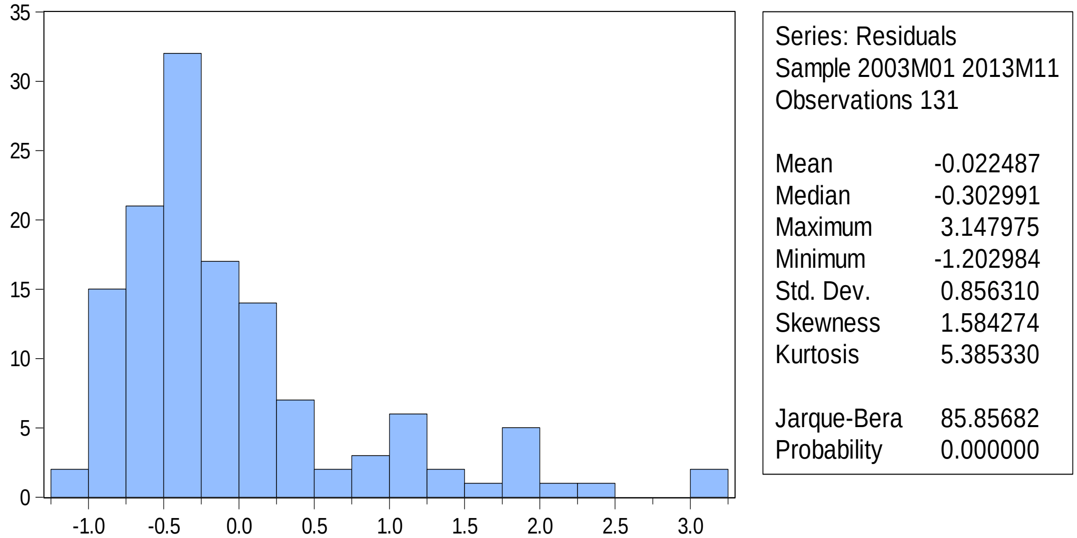


Figure 3.5: Histograms and Jacque-Bera Normality Test (Taiwan) (Continued)

Baillie



Legg

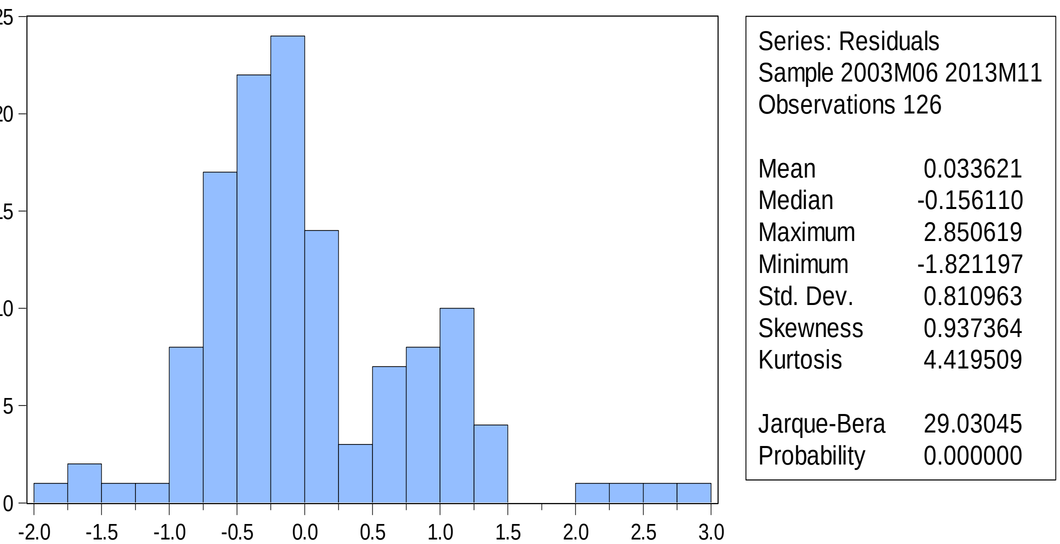
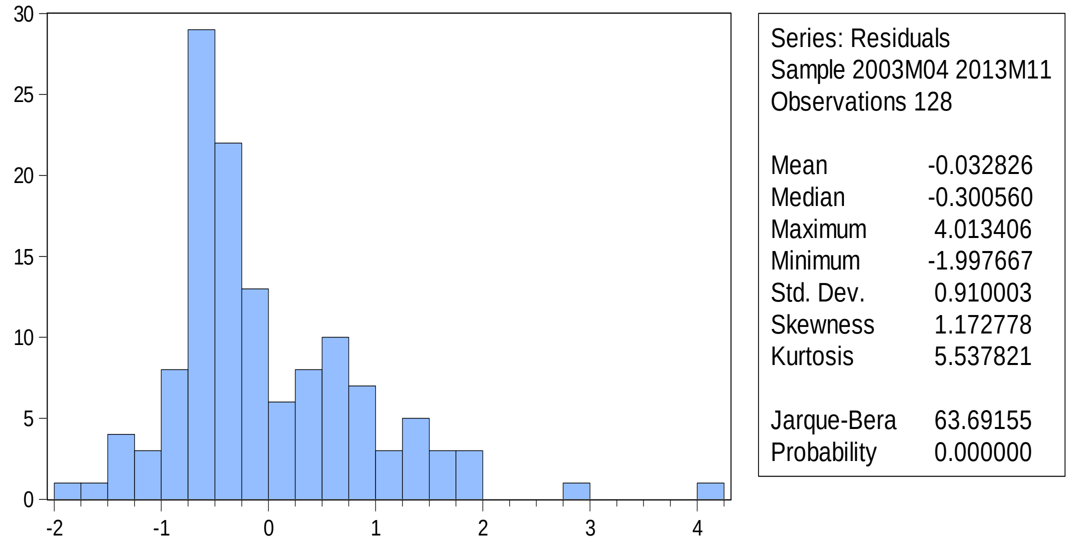


Figure 3.5: Histograms and Jacque-Bera Normality Test (Taiwan) (Continued)

Genesis



Martin

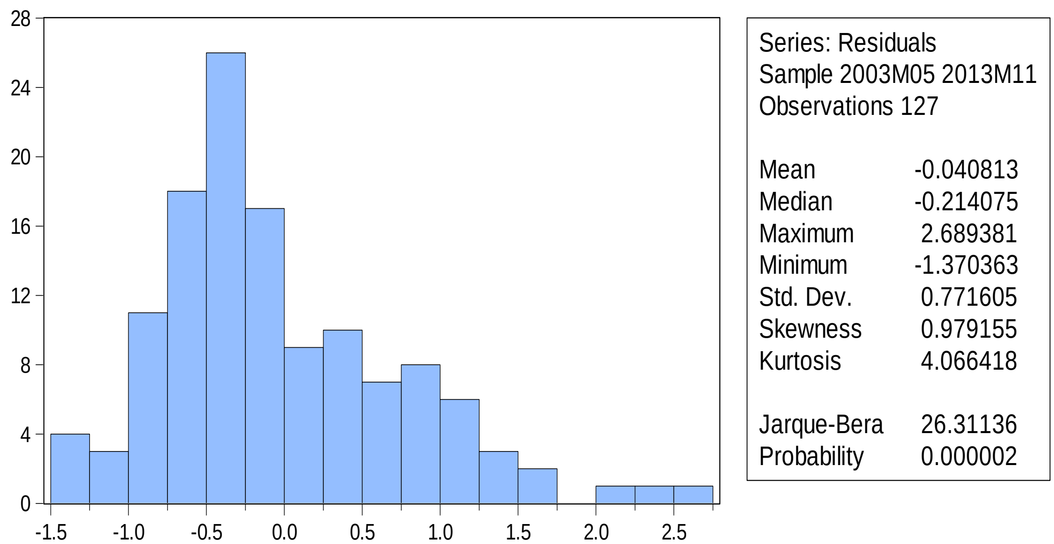
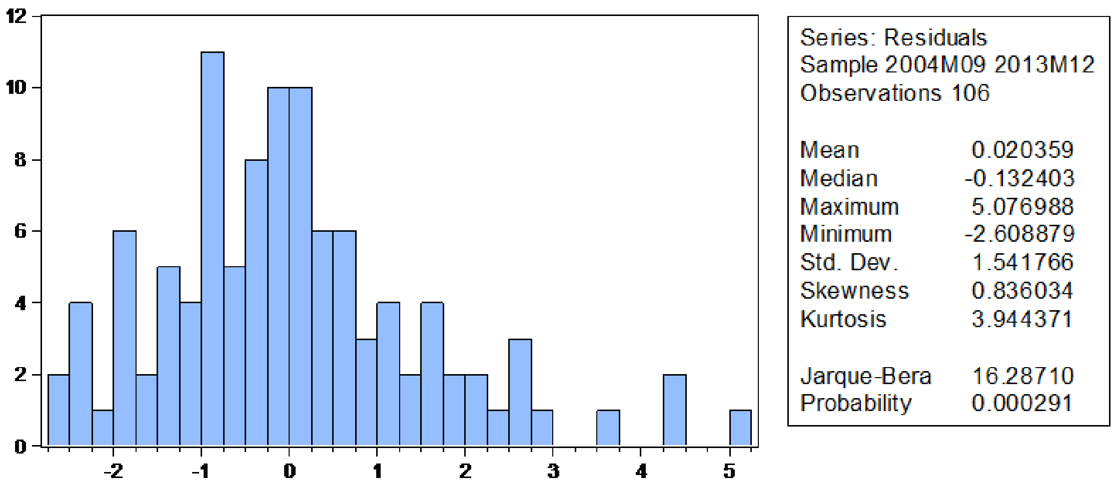


Figure 3.6: Histograms and Jacque-Bera Normality Test (Indonesia)

Aberdeen



Acadian

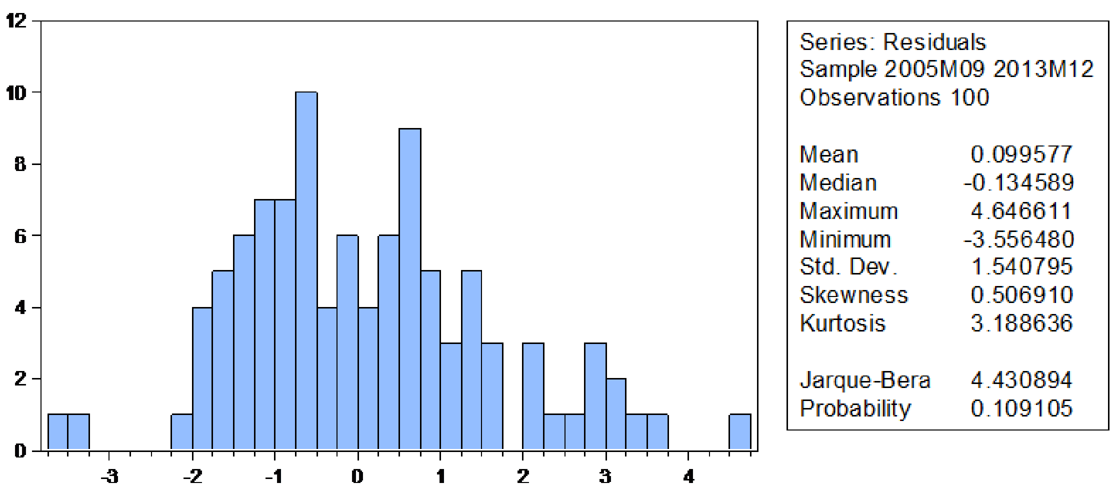
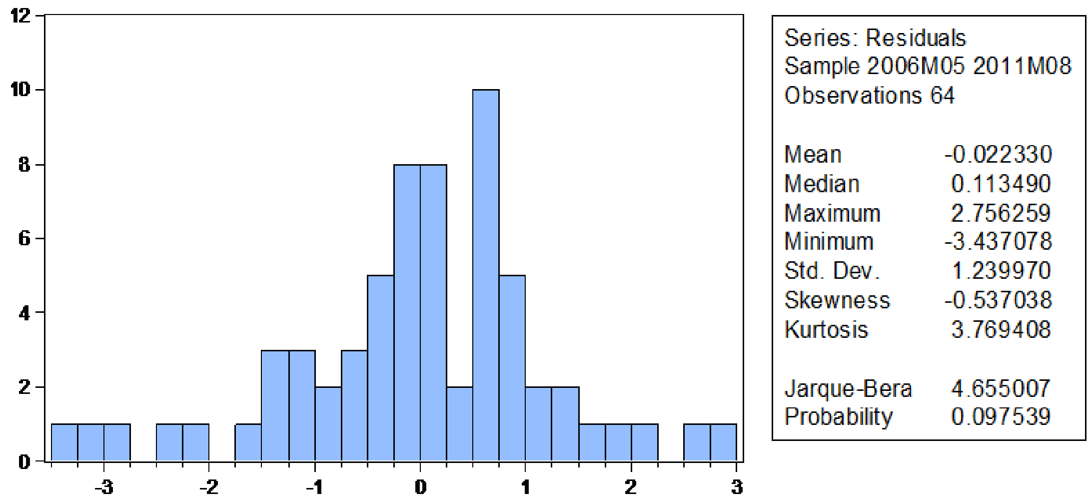


Figure 3.6: Histograms and Jacque-Bera Normality Test (Indonesia) (Continued)

Baillie



Genesis

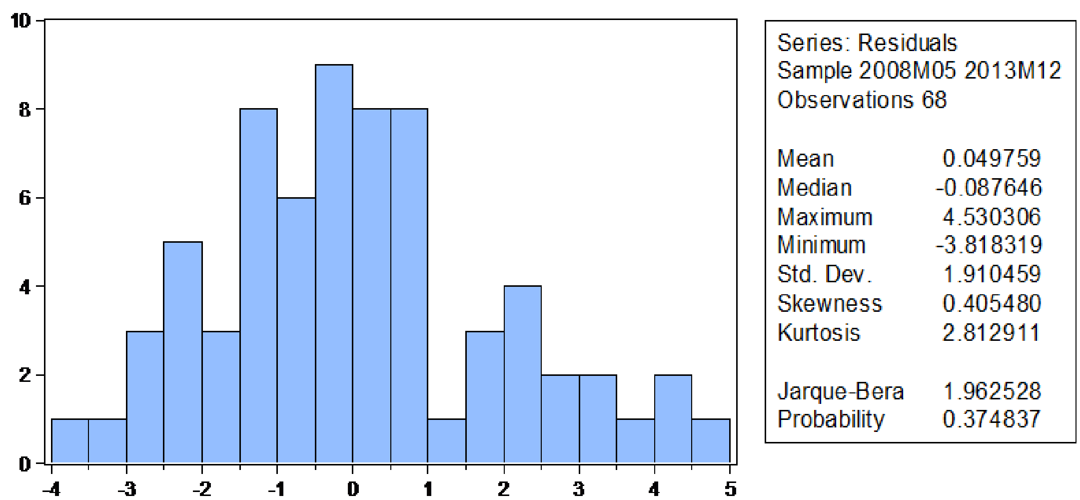
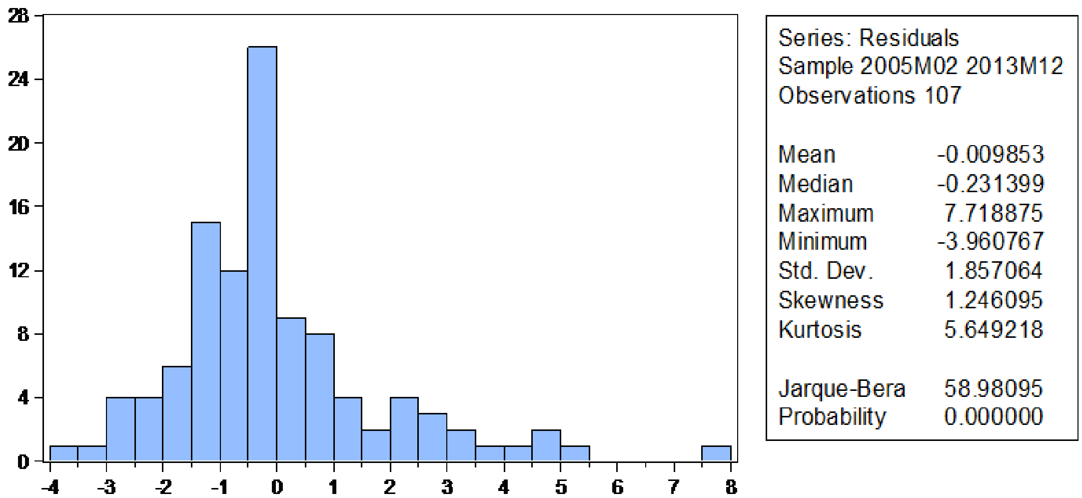


Figure 3.6: Histograms and Jacque-Bera Normality Test (Indonesia) (Continued)

Legg



Martin

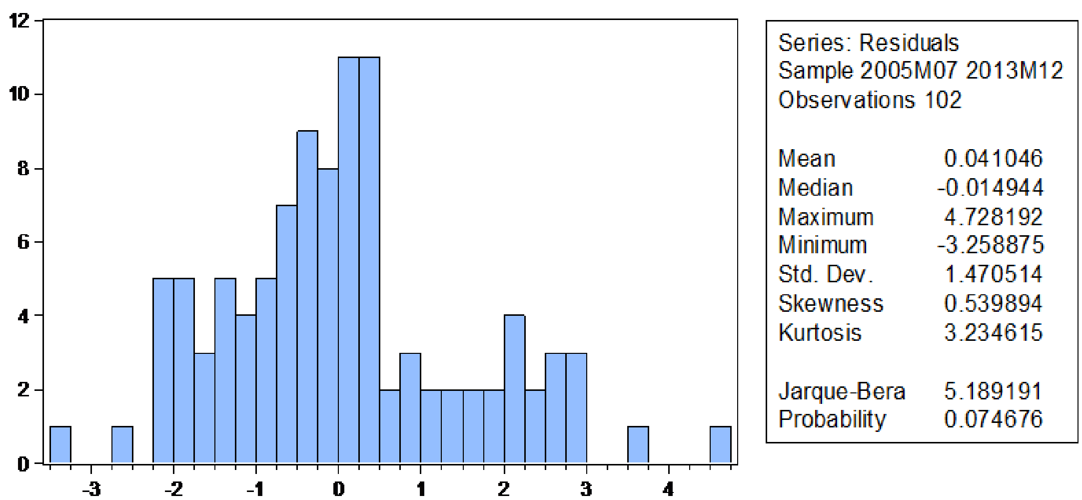


Table 6: Results from the White Heteroscedasticity Test

F- Test statistics	Thailand	Korea	Malaysia	Taiwan	Indonesia	Philippines
Aberdeen	0.593***	1.202***	4.048	1.061***	0.981***	0.915***
Acadian	0.917***	1.134***	1.590**	1.081	2.450	1.161***
Baillie	3.564	1.886***	1.157***	3.554	0.793***	1.264***
Genesis	2.038	0.767***	1.055***	2.323	3.108	2.271
Legg	0.173***	1.156***	1.237***	1.459*	1.376***	0.910***
Martin	1.2497***	1.436***	1.467*	2.919	2.425	0.907***

Note: *, **, ***Represents significance at 10%, 5%, and 1%, respectively, meaning data series are homoscedastic.

Table 7: Results from the Breusch-Godfrey Serial Correlation LM Test

F- Test statistics	Thailand	Korea	Malaysia	Taiwan	Indonesia	Philippines
Aberdeen	0.480***	0.092***	0.104***	1.237***	1.993***	0.032***
Acadian	0.385***	0.301***	0.369***	1.292***	1.278***	0.197***
Baillie	10.736	2.306*	0.958***	6.454	1.652***	5.703
Genesis	1.273***	0.012***	0.497***	0.458***	1.213***	0.725***
Legg	11.380	1.863	0.343***	1.278***	0.149***	0.149***
Martin	0.026***	5.498	0.540***	0.039***	0.245***	0.621***

Note: *, **, ***Represents significance at 10%, 5%, and 1%, respectively, meaning the regression does not suffer from serial correlation.

Table 8.1: Cross-correlation Analysis (Korea)

Covariance Analysis: Ordinary
Date: 07/06/14 Time: 13:05
Sample (adjusted): 2004M12 2011M08
Included observations: 81 after adjustments
Balanced sample (listwise missing value deletion)

Correlation Probability	RES_ABER...	RESID_ACA...	RESID_BAI...	RESID_GE...	RESID_LE...	RESID_MA...
RES_ABERDEEN	1.000000 -----					
RESID_ACADIAN	0.104496 0.3532	1.000000 -----				
RESID_BAILLIE	-0.101329 0.3681	-0.200248 0.0731	1.000000 -----			
RESID_GENESIS	-0.076085 0.4996	0.117620 0.2957	-0.045711 0.6853	1.000000 -----		
RESID_LEGG	0.054772 0.6272	-0.183176 0.1017	-0.135722 0.2270	0.094929 0.3992	1.000000 -----	
RESID_MARTIN	-0.017066 0.8798	-0.098241 0.3829	0.020278 0.8574	0.081083 0.4718	-0.042008 0.7096	1.000000 -----

Table 8.2: Cross-correlation Analysis (Malaysia)

Covariance Analysis: Ordinary
Date: 07/04/14 Time: 00:45
Sample (adjusted): 2004M03 2013M11
Included observations: 117 after adjustments
Balanced sample (listwise missing value deletion)

Correlation Probability	RES_ABER...	RES_ACADI...	RES_BAILLIE	RES_GENE...	RES_LEGG	RES_MART...
RES_ABERDEEN	1.000000 -----					
RES_ACADIAN	0.240363 0.0090	1.000000 -----				
RES_BAILLIE	0.251718 0.0062	0.155571 0.0940	1.000000 -----			
RES_GENESIS	-0.166204 0.0733	-0.023095 0.8048	-0.105938 0.2556	1.000000 -----		
RES_LEGG	0.182906 0.0484	0.173525 0.0613	0.001060 0.9909	0.062995 0.4998	1.000000 -----	
RES_MARTIN	0.027599 0.7677	0.086843 0.3518	0.082676 0.3755	-0.088717 0.3415	0.360105 0.0001	1.000000 -----

Table 8.3: Cross-correlation Analysis (Indonesia)

Covariance Analysis: Ordinary
Date: 07/04/14 Time: 00:26
Sample (adjusted): 2008M05 2011M08
Included observations: 34 after adjustments
Balanced sample (listwise missing value deletion)

Correlation Probability	RES_ABER...	RES_ACADI...	RES_BAILLIE	RES_GENE...	RES_LEGG	RES_MART...
RES_ABERDEEN	1.000000					

RES_ACADIAN	-0.430515	1.000000				
	0.0110	-----				
RES_BAILLIE	0.157282	-0.232894	1.000000			
	0.3744	0.1850	-----			
RES_GENESIS	-0.050227	-0.238611	0.130229	1.000000		
	0.7779	0.1741	0.4629	-----		
RES_LEGG	-0.251375	0.442929	-0.005227	-0.358819	1.000000	
	0.1515	0.0087	0.9766	0.0372	-----	
RES_MARTIN	0.183020	-0.206566	-0.035808	0.064328	-0.199021	1.000000
	0.3002	0.2411	0.8407	0.7178	0.2591	-----

Table 8.4: Cross-correlation Analysis (Philippines)

Sample (adjusted): 2006M02 2011M08
Included observations: 67 after adjustments
Balanced sample (listwise missing value deletion)

Correlation Probability	RES_ABER...	RES_ACADI...	RES_BAILLIE	RES_GENE...	RES_LEGG	RES_MART...
RES_ABERDEEN	1.000000					

RES_ACADIAN	-0.158166	1.000000				
	0.2011	-----				
RES_BAILLIE	-0.164907	0.195494	1.000000			
	0.1823	0.1129	-----			
RES_GENESIS	0.035523	0.216801	0.183523	1.000000		
	0.7753	0.0780	0.1371	-----		
RES_LEGG	0.030666	-0.129984	-0.091294	0.019485	1.000000	
	0.8054	0.2945	0.4625	0.8756	-----	
RES_MARTIN	-0.056229	0.126443	-0.066621	0.081458	-0.315114	1.000000
	0.6513	0.3079	0.5922	0.5123	0.0094	-----

Table 8.5: Cross-correlation Analysis (Taiwan)

Covariance Analysis: Ordinary
Date: 07/04/14 Time: 01:13
Sample (adjusted): 2003M10 2013M11
Included observations: 122 after adjustments
Balanced sample (listwise missing value deletion)

Correlation Probability	RES_ABER...	RES_ACADI...	RES_BAILLIE	RES_GENE...	RES_LEGG	RES_MART...
RES_ABERDEEN	1.000000 -----					
RES_ACADIAN	-0.189066 0.0370	1.000000 -----				
RES_BAILLIE	-0.050726 0.5790	0.003390 0.9704	1.000000 -----			
RES_GENESIS	-0.131933 0.1475	0.204661 0.0237	0.021862 0.8111	1.000000 -----		
RES_LEGG	0.016032 0.8609	-0.023275 0.7991	0.098579 0.2800	-0.106811 0.2416	1.000000 -----	
RES_MARTIN	0.068088 0.4562	0.033621 0.7131	-0.001706 0.9851	0.160330 0.0777	-0.064144 0.4827	1.000000 -----

Table 8.6: Cross-correlation Analysis (Thailand)

Covariance Analysis: Ordinary
Date: 07/04/14 Time: 01:50
Sample (adjusted): 2004M01 2013M11
Included observations: 119 after adjustments
Balanced sample (listwise missing value deletion)

Correlation Probability	RES_ABER...	RES_ACADI...	RES_BAILLIE	RES_GENE...	RES_LEGG	RES_MART...
RES_ABERDEEN	1.000000 -----					
RES_ACADIAN	0.136893 0.1377	1.000000 -----				
RES_BAILLIE	-0.147180 0.1102	0.161375 0.0795	1.000000 -----			
RES_GENESIS	-0.131134 0.1552	0.257596 0.0047	0.249005 0.0063	1.000000 -----		
RES_LEGG	0.183369 0.0459	-0.126523 0.1703	0.021665 0.8151	-0.023691 0.7981	1.000000 -----	
RES_MARTIN	0.021865 0.8134	0.127080 0.1684	0.117041 0.2049	0.011472 0.9015	0.136562 0.1386	1.000000 -----

Table 9.1: Regression Results (Thailand)

Aberdeen

Dependent variable: DAberdeen

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-10)	0.186562	0.073489	2.538633	0.0125
DCCINF(-5)	-0.307014	0.193207	-1.589042	0.1149
DCCINF(-3)	0.205084	0.198973	1.030711	0.3049
AR(1)	-0.914059	0.051152	-17.86961	0.0000
MA(3)	-0.625863	0.075538	-8.285406	0.0000
MA(2)	-0.910285	0.047824	-19.03426	0.0000
MA(1)	0.585398	0.102114	5.732779	0.0000
MA(14)	0.115080	0.029006	3.967455	0.0001

R-squared	0.428365	Mean dependent var	0.057059
Adjusted R-squared	0.392316	S.D. dependent var	1.959159
S.E. of regression	1.527245	Akaike info criterion	3.749669
Sum squared resid	258.9050	Schwarz criterion	3.936500
Log likelihood	-215.1053	Hannan-Quinn criter.	3.825535
Durbin-Watson stat	2.013931	Wald F-statistic	2.450469
Prob(Wald F-statistic)	0.067268		

Acadian

Dependent variable: Dacadian

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-3)	0.514457	0.146884	3.502481	0.0007
DCCINF(-1)	-0.379965	0.091730	-4.142194	0.0001
DCCINF(-4)	-0.353984	0.153661	-2.303675	0.0230
AR(3)	-0.299279	0.098693	-3.032425	0.0030
MA(1)	-0.746171	0.047099	-15.84272	0.0000
MA(19)	-0.667095	0.046704	-14.28343	0.0000
MA(20)	0.821773	0.038067	21.58734	0.0000

R-squared	0.593544	Mean dependent var	0.050407
Adjusted R-squared	0.572520	S.D. dependent var	2.468939
S.E. of regression	1.614240	Akaike info criterion	3.850832
Sum squared resid	302.2694	Schwarz criterion	4.010875
Log likelihood	-229.8262	Hannan-Quinn criter.	3.915842
Durbin-Watson stat	2.096264	Wald F-statistic	7.601990
Prob(Wald F-statistic)	0.000110		

Table 9.1: Regression Results (Thailand) (Continued)

Baillie

Dependent variable: DBaillie

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-1)	0.228192	0.121704	1.874979	0.0633
DCCINF(-2)	-0.141030	0.145366	-0.970176	0.3340
DCCINF(-3)	0.089682	0.153440	0.584474	0.5600
AR(4)	-0.174948	0.077856	-2.247051	0.0265
MA(2)	-0.374659	0.092350	-4.056930	0.0001
MA(1)	-0.707849	0.104453	-6.776709	0.0000
MA(12)	-0.105958	0.087876	-1.205766	0.2304

R-squared	0.400644	Mean dependent var	0.037805
Adjusted R-squared	0.369643	S.D. dependent var	1.702028
S.E. of regression	1.351326	Akaike info criterion	3.495276
Sum squared resid	211.8254	Schwarz criterion	3.655319
Log likelihood	-207.9595	Hannan-Quinn criter.	3.560285
Durbin-Watson stat	2.092024	Wald F-statistic	3.466540
Prob(Wald F-statistic)	0.018549		

Genesis

Dependent variable: DGenesis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-1)	0.191365	0.097597	1.960761	0.0522
AR(1)	0.260446	0.097099	2.682262	0.0083
AR(4)	0.026102	0.083637	0.312085	0.7555
MA(1)	-1.049537	0.117669	-8.919377	0.0000
MA(12)	-0.156343	0.071773	-2.178308	0.0313

R-squared	0.427110	Mean dependent var	0.001920
Adjusted R-squared	0.408014	S.D. dependent var	2.099369
S.E. of regression	1.615268	Akaike info criterion	3.836057
Sum squared resid	313.0909	Schwarz criterion	3.949190
Log likelihood	-234.7536	Hannan-Quinn criter.	3.882017
Durbin-Watson stat	2.108366	Wald F-statistic	3.844586
Prob(Wald F-statistic)	0.052224		

Table 9.1: Regression Results (Thailand) (Continued)

Legg

Dependent variable: DLegg

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF	0.301156	0.164527	1.830434	0.0698
DCCINF(-4)	0.234319	0.100671	2.327587	0.0217
DCCINF(-1)	-0.201548	0.171077	-1.178112	0.2412
AR(3)	-0.222869	0.144058	-1.547082	0.1246
AR(1)	-0.227888	0.145055	-1.571043	0.1189
AR(2)	-0.401075	0.128150	-3.129716	0.0022
MA(1)	-0.515678	0.092655	-5.565592	0.0000
MA(19)	-0.419334	0.086960	-4.822162	0.0000

R-squared	0.429073	Mean dependent var	0.068293
Adjusted R-squared	0.394320	S.D. dependent var	2.199484
S.E. of regression	1.711757	Akaike info criterion	3.975747
Sum squared resid	336.9631	Schwarz criterion	4.158654
Log likelihood	-236.5085	Hannan-Quinn criter.	4.050043
Durbin-Watson stat	2.002706	Wald F-statistic	2.325916
Prob(Wald F-statistic)	0.078433		

Martin

Dependent variable: DMartin

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-4)	0.193962	0.085067	2.280103	0.0244
DCCINF(-1)	0.229725	0.137767	1.667498	0.0980
DCCINF	-0.312892	0.143669	-2.177877	0.0314
MA(1)	-0.495976	0.092308	-5.373077	0.0000
MA(5)	0.308815	0.072269	4.273147	0.0000
MA(12)	0.339855	0.109979	3.090181	0.0025

R-squared	0.338970	Mean dependent var	0.038571
Adjusted R-squared	0.311428	S.D. dependent var	1.863687
S.E. of regression	1.546493	Akaike info criterion	3.756304
Sum squared resid	286.9968	Schwarz criterion	3.891365
Log likelihood	-230.6472	Hannan-Quinn criter.	3.811175
Durbin-Watson stat	1.911756	Wald F-statistic	3.996143
Prob(Wald F-statistic)	0.009421		

Table 9.2: Regression Results (Korea)

Aberdeen

Dependent variable: DAberdeen

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCOUTF(-2)	2.537662	0.701556	3.617188	0.0004
DCCOUTF(-3)	-2.895655	0.702968	-4.119184	0.0001
DABERDEEN_TH(-1)	-0.202400	0.198896	-1.017618	0.3110
DABERDEEN_TH(-1)*DCCOUTF(-1)	0.703502	0.325388	2.162043	0.0327
DCCINF(-11)	0.213170	0.407873	0.522638	0.6022
AR(1)	0.754166	0.032192	23.42699	0.0000
AR(2)	-0.925234	0.026686	-34.67179	0.0000
MA(1)	-1.349140	0.065402	-20.62837	0.0000
MA(2)	1.438230	0.047121	30.52211	0.0000
MA(3)	-0.700749	0.063835	-10.97755	0.0000

R-squared	0.431164	Mean dependent var	-0.222372
Adjusted R-squared	0.387407	S.D. dependent var	5.650471
S.E. of regression	4.422529	Akaike info criterion	5.886768
Sum squared resid	2288.375	Schwarz criterion	6.110719
Log likelihood	-363.8097	Hannan-Quinn criter.	5.977756
Durbin-Watson stat	2.032118	Wald F-statistic	6.153183
Prob(Wald F-statistic)	0.000042		

Acadian

Dependent variable: DAcadian

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-4)	0.931224	0.384340	2.422914	0.0172
DGENESIS_TH(-1)	-0.185411	0.083160	-2.229554	0.0280
AR(17)	0.199520	0.059275	3.366003	0.0011
AR(6)	-0.264868	0.082136	-3.224750	0.0017
AR(2)	0.521096	0.100279	5.196472	0.0000
AR(3)	-0.214526	0.059258	-3.620177	0.0005
MA(2)	-0.960867	0.047997	-20.01921	0.0000
MA(3)	0.629944	0.067555	9.324861	0.0000
MA(1)	-0.393377	0.086153	-4.566040	0.0000
MA(6)	0.289616	0.055904	5.180580	0.0000

R-squared	0.402247	Mean dependent var	-0.033828
Adjusted R-squared	0.349504	S.D. dependent var	4.310987
S.E. of regression	3.476954	Akaike info criterion	5.415235
Sum squared resid	1233.099	Schwarz criterion	5.657959
Log likelihood	-293.2532	Hannan-Quinn criter.	5.513716
Durbin-Watson stat	1.921180	Wald F-statistic	3.928334
Prob(Wald F-statistic)	0.022723		

Table 9.2: Regression Results (Korea) (Continued)

Baillie

Dependent variable: DBaillie

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-2)	0.841811	0.218896	3.845706	0.0003
DBAILLIE_TH(-1)	0.342446	0.299735	1.142496	0.2572
DBAILLIE_TH(-1)*DCCINF(-1)	0.865316	0.414368	2.088277	0.0405
AR(1)	-0.616848	0.086405	-7.138997	0.0000
AR(2)	0.285475	0.111673	2.556334	0.0128
AR(3)	0.662472	0.132783	4.989143	0.0000
AR(21)	-0.178526	0.046049	-3.876887	0.0002
AR(4)	0.334676	0.093065	3.596155	0.0006
MA(3)	-0.157547	0.055510	-2.838199	0.0060
MA(1)	-0.048124	0.004791	-10.04393	0.0000
MA(6)	0.549717	0.004792	114.7134	0.0000
MA(2)	-1.219389	0.049458	-24.65483	0.0000

R-squared	0.661901	Mean dependent var	0.107407
Adjusted R-squared	0.608001	S.D. dependent var	5.737890
S.E. of regression	3.592483	Akaike info criterion	5.531518
Sum squared resid	890.5094	Schwarz criterion	5.886251
Log likelihood	-212.0265	Hannan-Quinn criter.	5.673841
Durbin-Watson stat	2.031349	Wald F-statistic	5.285749
Prob(Wald F-statistic)	0.002437		

Legg

Dependent variable: DLegg

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-1)	-0.505613	0.228393	-2.213782	0.0287
DCCINF(-6)	0.901980	0.231563	3.895189	0.0002
DLEGG_TH(-1)	0.407916	0.193812	2.104698	0.0374
DLEGG_TH(-1)*DCCINF(-1)	0.681775	0.267894	2.544941	0.0122
AR(1)	-0.259146	0.173569	-1.493038	0.1381
MA(1)	-0.309696	0.099517	-3.111994	0.0023
MA(19)	-0.547719	0.060833	-9.003705	0.0000
MA(20)	0.296873	0.081550	3.640376	0.0004
MA(2)	-0.394334	0.059721	-6.602899	0.0000

R-squared	0.461612	Mean dependent var	-0.075781
Adjusted R-squared	0.425418	S.D. dependent var	4.262798
S.E. of regression	3.231251	Akaike info criterion	5.251334
Sum squared resid	1242.477	Schwarz criterion	5.451867
Log likelihood	-327.0854	Hannan-Quinn criter.	5.332812
Durbin-Watson stat	2.006178	Wald F-statistic	5.293353
Prob(Wald F-statistic)	0.000586		

Table 9.2: Regression Results (Korea) (Continued)

Genesis

Dependent variable: DGenesis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-4)	0.699961	0.391360	1.788533	0.0767
DGENESIS_TH(-1)	-0.086750	0.084320	-1.028829	0.3060
DGENESIS_TH(-1)*DCCINF(-1)	0.259344	0.123139	2.106102	0.0377
AR(17)	0.179346	0.054519	3.289585	0.0014
AR(6)	-0.270318	0.066750	-4.049679	0.0001
AR(2)	0.553115	0.101523	5.448146	0.0000
AR(3)	-0.186124	0.051960	-3.582095	0.0005
MA(2)	-1.006894	0.031539	-31.92502	0.0000
MA(3)	0.640764	0.079606	8.049149	0.0000
MA(1)	-0.347210	0.089057	-3.898722	0.0002
MA(6)	0.300484	0.059710	5.032378	0.0000

R-squared	0.429950	Mean dependent var	-0.033828
Adjusted R-squared	0.373509	S.D. dependent var	4.310987
S.E. of regression	3.412197	Akaike info criterion	5.385640
Sum squared resid	1175.952	Schwarz criterion	5.652635
Log likelihood	-290.5958	Hannan-Quinn criter.	5.493968
Durbin-Watson stat	1.925872	Wald F-statistic	8.078985
Prob(Wald F-statistic)	0.000071		

Martin

Dependent variable: DMartin

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCOUTF(-1)	2.062773	0.532116	3.876546	0.0002
DMARTIN_TH(-1)	-0.215109	0.204953	-1.049550	0.2964
DMARTIN_TH(-1)*DCCOUTF(-1)	-0.824749	0.189057	-4.362432	0.0000
DCCOUTF(-2)	-1.217572	0.596517	-2.041137	0.0438
AR(20)	0.408969	0.085727	4.770586	0.0000
MA(20)	-0.852901	0.040223	-21.20422	0.0000

R-squared	0.409554	Mean dependent var	-0.100000
Adjusted R-squared	0.380891	S.D. dependent var	4.032886
S.E. of regression	3.173215	Akaike info criterion	5.200840
Sum squared resid	1037.137	Schwarz criterion	5.348988
Log likelihood	-277.4458	Hannan-Quinn criter.	5.260919
Durbin-Watson stat	2.312805	Wald F-statistic	7.147167
Prob(Wald F-statistic)	0.000040		

Table 9.3: Regression Results (Malaysia)

Aberdeen

Dependent variable: DAberdeen

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-6)	-0.286033	0.141035	-2.028100	0.0443
DCCOUTF(-4)	0.343375	0.128007	2.682470	0.0081
DABERDEEN_TH(-1)	0.058831	0.130606	0.450445	0.6530
DABERDEEN_TH(-1)*DCCOUTF(-1)	-0.166509	0.212099	-0.785054	0.4336
AR(1)	-0.572993	0.173685	-3.299031	0.0012
MA(2)	-0.444074	0.141123	-3.146725	0.0020
MA(3)	-0.321588	0.117974	-2.725932	0.0072
MA(4)	-0.178523	0.090773	-1.966687	0.0510

R-squared	0.246219	Mean dependent var	0.090686
Adjusted R-squared	0.211505	S.D. dependent var	2.323252
S.E. of regression	2.062983	Akaike info criterion	4.334890
Sum squared resid	646.8968	Schwarz criterion	4.488649
Log likelihood	-338.7912	Hannan-Quinn criter.	4.397326
Durbin-Watson stat	1.834784	Wald F-statistic	3.244130
Prob(Wald F-statistic)	0.013796		

Acadian

Dependent variable: DAcadian

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCC(-2)	-0.673345	0.196828	-3.420978	0.0009
DCC(-3)	0.698425	0.187299	3.728933	0.0003
DACADIAN_TH(-1)	0.059888	0.066105	0.905956	0.3668
DACADIAN_TH(-1)*DCC(-1)	0.097407	0.043038	2.263248	0.0255
AR(1)	-0.648137	0.115490	-5.612084	0.0000
AR(2)	-0.496721	0.133658	-3.716366	0.0003
AR(3)	-0.553899	0.113902	-4.862953	0.0000
MA(2)	-0.095435	0.060022	-1.589992	0.1145
MA(4)	-0.836232	0.059820	-13.97912	0.0000

R-squared	0.433874	Mean dependent var	0.052937
Adjusted R-squared	0.395164	S.D. dependent var	2.065939
S.E. of regression	1.606705	Akaike info criterion	3.854997
Sum squared resid	302.0357	Schwarz criterion	4.057589
Log likelihood	-233.8648	Hannan-Quinn criter.	3.937304
Durbin-Watson stat	1.989812	Wald F-statistic	6.238081
Prob(Wald F-statistic)	0.000138		

Table 9.3: Regression Results (Malaysia) (Continued)

Baillie

Dependent variable: DBaillie

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-6)	0.819992	0.200627	4.087149	0.0001
DBAILLIE_TH(-1)	-0.053491	0.072393	-0.738904	0.4617
DBAILLIE_TH(-1)*DCCINF(-1)	0.101717	0.156720	0.649039	0.5178
DCCINF(-7)	0.564846	0.239034	2.363033	0.0201
DVIX(-1)	-0.012111	0.021951	-0.551735	0.5824
DRDIFF(-1)	2.060772	1.012964	2.034399	0.0446
DMSCI(-1)	-79.47450	135.4159	-0.586892	0.5586
DOUTPERF(-1)	-0.987790	3.603524	-0.274118	0.7846
AR(1)	0.387298	0.099365	3.897721	0.0002
AR(2)	0.638260	0.101520	6.287053	0.0000
MA(2)	-0.849791	0.134267	-6.329115	0.0000
MA(4)	-0.102881	0.129022	-0.797393	0.4271

R-squared	0.518016	Mean dependent var	2.691786
Adjusted R-squared	0.464998	S.D. dependent var	1.902799
S.E. of regression	1.391780	Akaike info criterion	3.600001
Sum squared resid	193.7052	Schwarz criterion	3.891269
Log likelihood	-189.6001	Hannan-Quinn criter.	3.718178
Durbin-Watson stat	2.007622	Wald F-statistic	2.896234
Prob(Wald F-statistic)	0.006046		

Legg

Dependent variable: DLegg

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCOUT(-8)	0.242764	0.120363	2.016934	0.0461
DLEGG_TH(-1)	0.271385	0.098338	2.759703	0.0068
DLEGG_TH(-1)*DCCOUT(-1)	-0.238933	0.157534	-1.516712	0.1322
DCCOUT(-2)	-0.220065	0.111210	-1.978833	0.0503
AR(12)	0.244988	0.137270	1.784718	0.0771
AR(1)	-0.767172	0.046918	-16.35118	0.0000
MA(2)	-0.797472	0.083020	-9.605823	0.0000

R-squared	0.511300	Mean dependent var	0.054244
Adjusted R-squared	0.484644	S.D. dependent var	2.509617
S.E. of regression	1.801611	Akaike info criterion	4.073204
Sum squared resid	357.0382	Schwarz criterion	4.238462
Log likelihood	-231.2824	Hannan-Quinn criter.	4.140297
Durbin-Watson stat	2.073781	Wald F-statistic	2.894170
Prob(Wald F-statistic)	0.025399		

Table 9.3: Regression Results (Malaysia) (Continued)

Genesis

Dependent variable: DGenesis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-2)	-1.775738	0.731180	-2.428593	0.0167
DCCINF(-1)	1.851597	0.746927	2.478953	0.0146
DGENESIS_TH(-1)	0.109787	0.132647	0.827658	0.4095
DGENESIS_TH(-1)*DCCINF(-1)	0.014854	0.208811	0.071137	0.9434
AR(1)	-0.657566	0.120737	-5.446271	0.0000
AR(2)	0.478521	0.131463	3.639965	0.0004
AR(3)	0.209268	0.068668	3.047516	0.0028
MA(2)	-0.962211	0.018361	-52.40583	0.0000

R-squared	0.343470	Mean dependent var	-0.007080
Adjusted R-squared	0.304524	S.D. dependent var	2.452430
S.E. of regression	2.045210	Akaike info criterion	4.330264
Sum squared resid	493.5801	Schwarz criterion	4.510346
Log likelihood	-264.8067	Hannan-Quinn criter.	4.403426
Durbin-Watson stat	2.001357	Wald F-statistic	1.939893
Prob(Wald F-statistic)	0.108311		

Martin

Dependent variable: DMartin

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DMARTIN_TH(-1)	0.378850	0.161552	2.345064	0.0207
DMARTIN_TH(-1)*DCCOUT(-1)	-0.384360	0.250437	-1.534755	0.1276
DCCOUT(-2)	0.182524	0.088644	2.059076	0.0417
AR(2)	-0.184276	0.097427	-1.891421	0.0611
AR(3)	0.452830	0.212387	2.132100	0.0351
AR(5)	-0.143104	0.134479	-1.064139	0.2895
MA(1)	-0.290545	0.207595	-1.399573	0.1643
MA(3)	-0.639266	0.206618	-3.093942	0.0025

R-squared	0.150511	Mean dependent var	0.129320
Adjusted R-squared	0.099249	S.D. dependent var	2.170808
S.E. of regression	2.060269	Akaike info criterion	4.345891
Sum squared resid	492.3861	Schwarz criterion	4.527845
Log likelihood	-261.4452	Hannan-Quinn criter.	4.419805
Durbin-Watson stat	1.863463	Wald F-statistic	2.583506
Prob(Wald F-statistic)	0.056675		

Table 9.4: Regression Results (Indonesia)

Aberdeen

Dependent variable: DAberdeen

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DABERDEEN_TH(-1)	-0.062312	0.066201	-0.941261	0.3489
DABERDEEN_TH(-1)*DCCINF(-1)	-0.101145	0.038374	-2.635773	0.0098
DCCINF(-1)	-0.634527	0.230460	-2.753308	0.0070
DCCINF(-2)	0.547661	0.203196	2.695242	0.0083
AR(1)	-1.047703	0.116130	-9.021842	0.0000
AR(2)	-0.895892	0.150382	-5.957426	0.0000
AR(3)	-0.639741	0.135750	-4.712659	0.0000
AR(4)	-0.238876	0.102335	-2.334257	0.0216

R-squared	0.576027	Mean dependent var	0.016230
Adjusted R-squared	0.545431	S.D. dependent var	2.310429
S.E. of regression	1.557732	Akaike info criterion	3.797470
Sum squared resid	235.3733	Schwarz criterion	3.999677
Log likelihood	-191.3672	Hannan-Quinn criter.	3.879408
Durbin-Watson stat	1.974182	Wald F-statistic	4.147846
Prob(Wald F-statistic)	0.003818		

Acadian

Dependent variable: DAcadian

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-1)	0.206632	0.081467	2.536399	0.0129
DACADIAN_TH(-1)	0.139682	0.062460	2.236341	0.0277
DACADIAN_TH(-1)*DCCINF(-1)	-0.029640	0.042277	-0.701072	0.4850
AR(1)	-0.825252	0.049636	-16.62610	0.0000
AR(15)	-0.158428	0.069247	-2.287869	0.0244
AR(16)	-0.269162	0.088461	-3.042725	0.0030
MA(2)	-0.963611	0.023842	-40.41616	0.0000

R-squared	0.541884	Mean dependent var	-0.003251
Adjusted R-squared	0.512328	S.D. dependent var	2.281242
S.E. of regression	1.593071	Akaike info criterion	3.836634
Sum squared resid	236.0224	Schwarz criterion	4.018996
Log likelihood	-184.8317	Hannan-Quinn criter.	3.910439
Durbin-Watson stat	1.750142	Wald F-statistic	6.213694
Prob(Wald F-statistic)	0.000681		

Table 9.4: Regression Results (Indonesia) (Continued)

Baillie

Dependent variable: DBaillie

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-10)	-0.485269	0.202380	-2.397810	0.0198
DCCINF(-3)	0.599573	0.204036	2.938571	0.0048
DBAILLIE_TH(-1)	-0.374628	0.085030	-4.405827	0.0000
DBAILLIE_TH(-1)*DCCINF(-1)	-0.649158	0.196512	-3.303405	0.0017
AR(1)	-0.403257	0.109840	-3.671329	0.0005
AR(15)	0.013711	0.066579	0.205933	0.8376
MA(21)	-0.939612	0.027762	-33.84492	0.0000

R-squared	0.771803	Mean dependent var	0.021864
Adjusted R-squared	0.747782	S.D. dependent var	2.596137
S.E. of regression	1.303814	Akaike info criterion	3.471382
Sum squared resid	96.89600	Schwarz criterion	3.707510
Log likelihood	-104.0842	Hannan-Quinn criter.	3.564405
Durbin-Watson stat	2.178118	Wald F-statistic	7.296784
Prob(Wald F-statistic)	0.000081		

Legg

Dependent variable: DLegg

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-6)	-0.567889	0.269653	-2.105996	0.0377
DLEGG_TH(-1)	0.055926	0.072738	0.768867	0.4438
DLEGG_TH(-1)*DCCINF(-1)	-0.113698	0.088142	-1.289937	0.2001
DCCINF(-4)	0.375355	0.295792	1.268981	0.2074
AR(2)	-0.516001	0.112465	-4.588083	0.0000
AR(1)	-0.751105	0.101708	-7.384903	0.0000
AR(3)	-0.374120	0.179311	-2.086427	0.0395
AR(4)	-0.300597	0.181815	-1.653312	0.1014

R-squared	0.479406	Mean dependent var	0.016251
Adjusted R-squared	0.442596	S.D. dependent var	2.573850
S.E. of regression	1.921624	Akaike info criterion	4.216042
Sum squared resid	365.5711	Schwarz criterion	4.415879
Log likelihood	-217.5582	Hannan-Quinn criter.	4.297053
Durbin-Watson stat	2.027018	Wald F-statistic	1.940227
Prob(Wald F-statistic)	0.109683		

Table 9.4: Regression Results (Indonesia) (Continued)

Genesis

Dependent variable: DGenesis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-2)	-0.652930	0.368233	-1.773145	0.0792
DCCINF(-1)	0.087220	0.349122	0.249827	0.8032
DGENESIS_TH(-1)	0.200868	0.124259	1.616525	0.1090
DGENESIS_TH(-1)*DCCINF(-1)	-0.073191	0.109646	-0.667520	0.5059
DCCINF(-3)	0.480534	0.277644	1.730754	0.0865
AR(2)	-0.179405	0.082459	-2.175684	0.0319
AR(1)	-0.462214	0.080830	-5.718316	0.0000
MA(20)	-0.018345	0.023869	-0.768550	0.4439
MA(19)	0.863831	0.032851	26.29504	0.0000

R-squared	0.539985	Mean dependent var	-0.078612
Adjusted R-squared	0.504256	S.D. dependent var	3.189701
S.E. of regression	2.245840	Akaike info criterion	4.532981
Sum squared resid	519.5112	Schwarz criterion	4.751432
Log likelihood	-244.8469	Hannan-Quinn criter.	4.621613
Durbin-Watson stat	1.994713	Wald F-statistic	1.690624
Prob(Wald F-statistic)	0.143444		

Martin

Dependent variable: DMartin

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-1)	0.272971	0.091085	2.996901	0.0035
DCCINF(-12)	-0.180302	0.131377	-1.372400	0.1732
DMARTIN_TH(-1)	0.014871	0.026187	0.567877	0.5715
DMARTIN_TH(-1)*DCCINF(-1)	0.243807	0.116089	2.100162	0.0384
AR(2)	-0.985718	0.030481	-32.33888	0.0000
AR(1)	-0.977462	0.024432	-40.00799	0.0000
AR(3)	-0.930336	0.033415	-27.84225	0.0000
MA(4)	-0.999892	0.023538	-42.47928	0.0000

R-squared	0.601309	Mean dependent var	-0.002080
Adjusted R-squared	0.571620	S.D. dependent var	2.329817
S.E. of regression	1.524884	Akaike info criterion	3.756898
Sum squared resid	218.5754	Schwarz criterion	3.962778
Log likelihood	-183.6018	Hannan-Quinn criter.	3.840266
Durbin-Watson stat	1.943959	Wald F-statistic	18.04717
Prob(Wald F-statistic)	0.000000		

Table 9.5: Regression Results (Philippines)

Aberdeen

Dependent variable: DAberdeen

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-5)	-0.176918	0.091615	-1.931113	0.0560
DABERDEEN_TH(-1)	0.009406	0.048129	0.195429	0.8454
DABERDEEN_TH*DCCINF(-1)	-0.177888	0.107210	-1.659246	0.0999
AR(12)	-0.172548	0.081669	-2.112779	0.0369
AR(4)	-0.155496	0.081917	-1.898211	0.0603
MA(1)	-0.851618	0.054715	-15.56454	0.0000
MA(8)	-0.120126	0.057737	-2.080574	0.0398

R-squared	0.467407	Mean dependent var	0.004963
Adjusted R-squared	0.438356	S.D. dependent var	1.341476
S.E. of regression	1.005341	Akaike info criterion	2.906496
Sum squared resid	111.1782	Schwarz criterion	3.071754
Log likelihood	-163.0300	Hannan-Quinn criter.	2.973588
Durbin-Watson stat	2.014969	Wald F-statistic	1.939080
Prob(Wald F-statistic)	0.127474		

Acadian

Dependent variable: DAcadian

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-1)	-0.283534	0.130711	-2.169163	0.0325
DCCINF(-2)	0.291133	0.156946	1.854990	0.0667
DACADIAN_TH(-1)	0.024630	0.026063	0.945012	0.3470
DACADIAN_TH(-1)*DCCINF(-1)	0.227686	0.097683	2.330869	0.0219
AR(3)	-0.224027	0.085425	-2.622494	0.0102
AR(1)	-0.545958	0.073357	-7.442480	0.0000
AR(2)	-0.540101	0.070629	-7.647021	0.0000
AR(6)	0.137665	0.070883	1.942145	0.0551
AR(19)	-0.230303	0.069150	-3.330479	0.0012
AR(22)	0.312126	0.061056	5.112136	0.0000
MA(19)	0.868619	0.032122	27.04155	0.0000

R-squared	0.601555	Mean dependent var	0.008411
Adjusted R-squared	0.560051	S.D. dependent var	1.027873
S.E. of regression	0.681775	Akaike info criterion	2.168892
Sum squared resid	44.62241	Schwarz criterion	2.443669
Log likelihood	-105.0357	Hannan-Quinn criter.	2.280283
Durbin-Watson stat	2.066199	Wald F-statistic	2.232699
Prob(Wald F-statistic)	0.071121		

Table 9.5: Regression Results (Philippines) (Continued)

Baillie

Dependent variable: DBaillie

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-5)	0.307627	0.085237	3.609093	0.0006
DCCINF(-2)	-0.209549	0.111734	-1.875426	0.0648
DBAILLIE_TH(-1)	0.012964	0.046621	0.278061	0.7818
DBAILLIE_TH(-1)*DCCINF_TH(-1)	-0.006716	0.049952	-0.134455	0.8934
AR(3)	-0.304874	0.087348	-3.490330	0.0008
AR(19)	-0.150617	0.088673	-1.698574	0.0938
AR(1)	-0.270734	0.108082	-2.504895	0.0145
AR(2)	-0.215113	0.087384	-2.461685	0.0163
AR(5)	-0.335296	0.140565	-2.385341	0.0197
MA(1)	-0.489634	0.071523	-6.845780	0.0000
MA(19)	0.380475	0.073336	5.188100	0.0000
MA(20)	-0.890636	0.033056	-26.94365	0.0000

R-squared	0.721242	Mean dependent var	-0.018313
Adjusted R-squared	0.678054	S.D. dependent var	0.990487
S.E. of regression	0.562006	Akaike info criterion	1.818386
Sum squared resid	22.42538	Schwarz criterion	2.168098
Log likelihood	-63.46303	Hannan-Quinn criter.	1.958881
Durbin-Watson stat	2.291803	Wald F-statistic	5.733192
Prob(Wald F-statistic)	0.000468		

Legg

Dependent variable: DLegg

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-10)	-0.156897	0.087944	-1.784051	0.0770
DCCINF(-1)	-0.230502	0.080700	-2.856267	0.0051
DLEGG_TH(-1)	-0.056209	0.047648	-1.179655	0.2405
DLEGG_TH(-1)*DCCINF(-1)	0.056780	0.030046	1.889763	0.0612
AR(4)	-0.134297	0.099070	-1.355576	0.1778
MA(1)	-1.026855	0.013519	-75.95662	0.0000
MA(19)	0.035181	0.008127	4.328929	0.0000

R-squared	0.454314	Mean dependent var	-0.006720
Adjusted R-squared	0.426567	S.D. dependent var	1.102006
S.E. of regression	0.834498	Akaike info criterion	2.530398
Sum squared resid	82.17367	Schwarz criterion	2.688784
Log likelihood	-151.1499	Hannan-Quinn criter.	2.594742
Durbin-Watson stat	1.779730	Wald F-statistic	9.682734
Prob(Wald F-statistic)	0.000001		

Table 9.5: Regression Results (Philippines) (Continued)

Genesis

Dependent variable: DGenesis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-5)	-0.521697	0.138161	-3.776014	0.0003
DCCINF(-3)	0.451540	0.122669	3.680949	0.0004
DGENESIS_TH(-1)	0.177757	0.052431	3.390273	0.0010
DGENESIS_TH(-1)*DCCINF(-1)	0.089212	0.050060	1.782094	0.0777
AR(19)	0.414247	0.137473	3.013285	0.0033
AR(2)	-0.181778	0.066360	-2.739265	0.0073
MA(1)	-0.821018	0.025445	-32.26687	0.0000
MA(19)	-0.699568	0.047474	-14.73591	0.0000
MA(20)	0.813557	0.039120	20.79643	0.0000

R-squared	0.544548	Mean dependent var	0.042909
Adjusted R-squared	0.508473	S.D. dependent var	1.287296
S.E. of regression	0.902511	Akaike info criterion	2.711004
Sum squared resid	82.26710	Schwarz criterion	2.931953
Log likelihood	-140.1052	Hannan-Quinn criter.	2.800622
Durbin-Watson stat	2.174642	Wald F-statistic	5.065444
Prob(Wald F-statistic)	0.000923		

Martin

Dependent variable: DMartin

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-9)	-0.233471	0.134810	-1.731856	0.0861
DMARTIN_TH(-1)	0.068045	0.051287	1.326741	0.1873
DMARTIN_TH(-1)*DCCINF(-1)	-0.075895	0.037683	-2.014011	0.0464
DCCINF(-5)	0.103303	0.116961	0.883224	0.3790
AR(3)	-0.126810	0.081998	-1.546508	0.1248
AR(9)	0.032047	0.077863	0.411579	0.6814
MA(1)	-0.897126	0.124100	-7.229058	0.0000
MA(2)	-0.079285	0.124678	-0.635917	0.5261

R-squared	0.491332	Mean dependent var	0.014419
Adjusted R-squared	0.459540	S.D. dependent var	1.042290
S.E. of regression	0.766250	Akaike info criterion	2.369723
Sum squared resid	65.75952	Schwarz criterion	2.555556
Log likelihood	-134.1834	Hannan-Quinn criter.	2.445191
Durbin-Watson stat	1.949749	Wald F-statistic	4.459058
Prob(Wald F-statistic)	0.002214		

Table 9.6: Regression Results (Taiwan)

Aberdeen

Dependent variable: DAberdeen

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-2)	0.259264	0.144109	1.799089	0.0746
DCCINF(-4)	-0.314416	0.166106	-1.892860	0.0608
DABERDEEN_TH(-1)	0.077169	0.051598	1.495601	0.1374
DABERDEEN_TH(-1)*DCCINF(-1)	-0.089575	0.019759	-4.533367	0.0000
AR(1)	0.208750	0.089586	2.330156	0.0215
AR(3)	0.107321	0.089805	1.195034	0.2345
MA(1)	-1.109901	0.010701	-103.7146	0.0000
MA(8)	0.114436	0.008850	12.93050	0.0000

R-squared	0.442791	Mean dependent var	0.016905
Adjusted R-squared	0.409736	S.D. dependent var	1.312769
S.E. of regression	1.008582	Akaike info criterion	2.916355
Sum squared resid	120.0341	Schwarz criterion	3.096436
Log likelihood	-175.7304	Hannan-Quinn criter.	2.989516
Durbin-Watson stat	2.045457	Wald F-statistic	8.247294
Prob(Wald F-statistic)	0.000007		

Acadian

Dependent variable: DAcadian

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-3)	0.157964	0.110115	1.434538	0.1542
DCCINF(-8)	-0.245122	0.109714	-2.234196	0.0274
DACADIAN_TH(-1)	0.034351	0.035582	0.965405	0.3364
DACADIAN_TH(-1)*DCCINF(-1)	0.009424	0.116011	0.081230	0.9354
AR(7)	-0.133884	0.059914	-2.234593	0.0274
AR(2)	-0.288803	0.088640	-3.258160	0.0015
AR(1)	-0.203694	0.125805	-1.619120	0.1082
MA(1)	-0.682624	0.058783	-11.61267	0.0000
MA(8)	-0.317343	0.077365	-4.101882	0.0001

R-squared	0.512522	Mean dependent var	-0.027623
Adjusted R-squared	0.478010	S.D. dependent var	1.119942
S.E. of regression	0.809145	Akaike info criterion	2.485231
Sum squared resid	73.98288	Schwarz criterion	2.692085
Log likelihood	-142.5991	Hannan-Quinn criter.	2.569248
Durbin-Watson stat	2.012617	Wald F-statistic	1.840669
Prob(Wald F-statistic)	0.125922		

Table 9.6: Regression Results (Taiwan) (Continued)

Baillie

Dependent variable: DBaillie

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-3)	0.070483	0.154458	0.456324	0.6490
DCCINF(-1)	-0.290743	0.118863	-2.446042	0.0159
DBAILLIE_TH(-1)	-0.042437	0.039103	-1.085261	0.2799
DBAILLIE_TH(-1)*DCCINF(-1)	0.054673	0.144559	0.378207	0.7059
AR(7)	0.075351	0.174363	0.432149	0.6664
MA(1)	-0.897921	0.045236	-19.84981	0.0000
MA(8)	0.231294	0.115503	2.002494	0.0474
MA(12)	-0.171080	0.065943	-2.594346	0.0106
MA(6)	-0.162230	0.113127	-1.434052	0.1541

R-squared	0.432220	Mean dependent var	0.019847
Adjusted R-squared	0.394989	S.D. dependent var	1.136821
S.E. of regression	0.884247	Akaike info criterion	2.658068
Sum squared resid	95.39096	Schwarz criterion	2.855601
Log likelihood	-165.1035	Hannan-Quinn criter.	2.738334
Durbin-Watson stat	1.928773	Wald F-statistic	7.615302
Prob(Wald F-statistic)	0.000016		

Legg

Dependent variable: DLegg

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-4)	-0.203114	0.117421	-1.729786	0.0865
DLEGG_TH(-1)	-0.042277	0.045564	-0.927876	0.3555
DLEGG_TH(-1)*DCCINF(-1)	0.073868	0.036601	2.018174	0.0460
DCCINF(-1)	-0.190625	0.115881	-1.645003	0.1028
AR(1)	-0.427146	0.120621	-3.541220	0.0006
AR(10)	0.064354	0.102092	0.630351	0.5298
MA(1)	-0.586788	0.168570	-3.480975	0.0007
MA(2)	-0.553121	0.169007	-3.272759	0.0014
MA(12)	0.140486	0.057789	2.431043	0.0167

R-squared	0.497290	Mean dependent var	-0.010084
Adjusted R-squared	0.460730	S.D. dependent var	1.125293
S.E. of regression	0.826360	Akaike info criterion	2.529044
Sum squared resid	75.11570	Schwarz criterion	2.739230
Log likelihood	-141.4781	Hannan-Quinn criter.	2.614394
Durbin-Watson stat	1.849264	Wald F-statistic	49.39940
Prob(Wald F-statistic)	0.000000		

Table 9.6: Regression Results (Taiwan) (Continued)

Genesis

Dependent variable: DGenesis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-5)	-0.370475	0.170359	-2.174673	0.0316
DCCINF(-3)	0.284469	0.168445	1.688795	0.0938
DGENESIS_TH(-1)	0.068992	0.049152	1.403628	0.1630
DGENESIS_TH(-1)*DCCINF(-1)	0.071148	0.036944	1.925821	0.0565
AR(1)	-0.856157	0.086043	-9.950332	0.0000
MA(2)	-0.916652	0.055386	-16.55018	0.0000
MA(3)	-0.040348	0.053858	-0.749145	0.4552

R-squared	0.509192	Mean dependent var	0.031456
Adjusted R-squared	0.484855	S.D. dependent var	1.299786
S.E. of regression	0.932903	Akaike info criterion	2.752105
Sum squared resid	105.3073	Schwarz criterion	2.908075
Log likelihood	-169.1347	Hannan-Quinn criter.	2.815476
Durbin-Watson stat	2.097025	Wald F-statistic	5.089402
Prob(Wald F-statistic)	0.000797		

Martin

Dependent variable: DMartin

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-2)	0.366756	0.174460	2.102233	0.0376
DCCINF(-3)	-0.411264	0.163118	-2.521261	0.0130
DMARTIN_TH(-1)	0.093443	0.053965	1.731541	0.0859
DMARTIN_TH(-1)*DCCINF(-1)	-0.106539	0.043300	-2.460483	0.0153
AR(1)	-0.786350	0.068321	-11.50966	0.0000
AR(2)	-0.566686	0.127584	-4.441664	0.0000
MA(2)	-0.177196	0.096195	-1.842047	0.0680
MA(3)	-0.767629	0.097279	-7.890960	0.0000

R-squared	0.496139	Mean dependent var	0.027263
Adjusted R-squared	0.466501	S.D. dependent var	1.088558
S.E. of regression	0.795094	Akaike info criterion	2.440208
Sum squared resid	75.22875	Schwarz criterion	2.619369
Log likelihood	-146.9532	Hannan-Quinn criter.	2.512999
Durbin-Watson stat	1.943891	Wald F-statistic	5.085195
Prob(Wald F-statistic)	0.000810		

Table 10.1: Seemingly Unrelated Regression Results (Korea)

System: SUR
Estimation Method: Seemingly Unrelated Regression
Iterate coefficients after one-step weighting matrix
Convergence achieved after: 1 weight matrix, 21 total coef iterations

	Coefficient	Std. Error	t-Statistic	Prob.
DCCOUTF(-2)	1.652	0.732	2.257	0.024
DCCOUTF(-3)	-2.065	0.745	-2.772	0.006
DABERDEEN_TH(-1)	0.031	0.237	0.131	0.896
DABERDEEN_TH(-1)*DCCOUTF(-1)	0.306	0.379	0.807	0.420
DCCINF(-11)	0.207	0.647	0.320	0.749
AR(1)	-0.457	0.086	-5.342	0.000
AR(2)	-0.125	0.084	-1.494	0.136
DCCINF(-4)	0.164	0.562	0.292	0.770
DGENESIS_TH(-1)	-0.134	0.167	-0.802	0.423
AR(17)	0.191	0.076	2.525	0.012
AR(6)	-0.141	0.081	-1.757	0.079
AR(2)	-0.219	0.087	-2.528	0.012
AR(3)	-0.037	0.087	-0.419	0.675
DCCINF(-2)	0.332	0.346	0.962	0.337
DBAILLIE_TH(-1)	0.229	0.235	0.974	0.331
DBAILLIE_TH (-1)*DCCINF(-1)	0.505	0.381	1.327	0.185
AR(1)	-0.935	0.107	-8.703	0.000
AR(2)	-0.757	0.144	-5.262	0.000
AR(3)	-0.266	0.148	-1.797	0.073
AR(21)	-0.192	0.067	-2.875	0.004
AR(4)	-0.071	0.107	-0.660	0.509
DCCINF(-5)	-0.106	0.308	-0.344	0.731
DCCINF(-1)	-0.105	0.321	-0.326	0.745
DCCINF(-2)	0.173	0.318	0.545	0.586
DACADIAN_TH(-1)	0.002	0.070	0.030	0.976
DACADIAN_TH(-1)*DCCINF(-1)	0.081	0.127	0.640	0.522
AR(3)	0.046	0.089	0.518	0.605
DCCINF(-1)	-0.655	0.482	-1.359	0.175
DCCINF(-6)	0.786	0.484	1.624	0.105

Table 10.1: Seemingly Unrelated Regression Results (Korea) (Continued)

DLEGG_TH(-1)*DCCINF(-1)	0.980	0.321	3.050	0.002
AR(1)	-0.445	0.075	-5.902	0.000
DCCOUTF(-1)	1.590	0.561	2.834	0.005
DMARTIN_TH(-1)	-0.202	0.200	-1.007	0.314
DMARTIN_TH (-1)*DCCOUTF(-1)	-0.897	0.279	-3.217	0.001
DCCOUTF(-2)	-0.709	0.566	-1.252	0.211
AR(20)	0.105	0.090	1.164	0.245

Determinant residual covariance 3188501.

Equation: DABERDEEN = C(1)*DCCOUTF(-2) + C(2)*DCCOUTF(-3) + C(3)*DABERDEEN_TH(-1) + C(4)*DABERDEEN_TH(-1) *DCCOUTF(-1) + C(5)*DCCINF(-11) + [AR(1)=C(6),AR(2)=C(7),BACKCAST=2003M05,ESTSMPL="2003M05 2013M11"]

Observations: 127

R-squared	0.266597	Mean dependent var	-0.222372
Adjusted R-squared	0.229927	S.D. dependent var	5.650471
S.E. of regression	4.958504	Sum squared resid	2950.411
Durbin-Watson stat	2.079031		

Equation: DGENESIS = C(8)*DCCINF(-4) + C(9)*DGENESIS_TH(-1) + [AR(17)=C(10),AR(6)=C(11),AR(2)=C(12),AR(3)=C(13),BACKCAST =2004M08,ESTSMPL="2004M08 2013M11"]

Observations: 112

R-squared	0.123998	Mean dependent var	-0.033828
Adjusted R-squared	0.082677	S.D. dependent var	4.310987
S.E. of regression	4.128932	Sum squared resid	1807.097
Durbin-Watson stat	2.588268		

Equation: DBAILLIE = C(14)*DCCINF(-2) + C(15)*DBAILLIE_TH(-1) + C(16)*DBAILLIE_TH(-1)*DCCINF(-1) + [AR(1)=C(17),AR(2)=C(18),AR(3)=C(19),AR(21)=C(20),AR(4)=C(21),BACKCAST=2004M12,ESTSMPL="2004M12 2011M08"]

Observations: 81

R-squared	0.550647	Mean dependent var	0.107407
Adjusted R-squared	0.507558	S.D. dependent var	5.737890
S.E. of regression	4.026518	Sum squared resid	1183.538
Durbin-Watson stat	1.873529		

Equation: DACADIAN = C(22)*DCCINF(-5) + C(23)*DCCINF(-1) + C(24) *DCCINF(-2) + C(25)*DACADIAN_TH(-1) + C(26)*DACADIAN_TH(-1)*DCCINF(-1) + [AR(3)=C(27),BACKCAST=2003M06,ESTSMPL=" 2003M06 2013M11"]

Observations: 126

R-squared	0.005638	Mean dependent var	-0.018016
Adjusted R-squared	-0.035794	S.D. dependent var	1.942396
S.E. of regression	1.976854	Sum squared resid	468.9541
Durbin-Watson stat	2.841321		

Table 10.1: Seemingly Unrelated Regression Results (Korea) (Continued)

[AR(1)=C(32),BACKCAST=2003M04,ESTSMPL="2003M04
2013M11"]

Observations: 128

R-squared	0.272308	Mean dependent var	-0.075781
Adjusted R-squared	0.248643	S.D. dependent var	4.262797
S.E. of regression	3.695029	Sum squared resid	1679.349
Durbin-Watson stat	2.152637		

Equation: DMARTIN = C(33)*DCCOUTF(-1) + C(34)*DMARTIN_TH(-1) +
C(35)*DMARTIN_TH(-1)*DCCOUTF(-1) + C(36)*DCCOUTF(-2) +
[AR(20)=C(37),BACKCAST=2004M11,ESTSMPL="2004M11
2013M11"]

Observations: 109

R-squared	0.141212	Mean dependent var	-0.100000
Adjusted R-squared	0.108182	S.D. dependent var	4.032886
S.E. of regression	3.808501	Sum squared resid	1508.487
Durbin-Watson stat	2.391649		

Table 10.2: Seemingly Unrelated Regression Results (Malaysia)

System: SUR
Estimation Method: Seemingly Unrelated Regression
Iterate coefficients after one-step weighting matrix
Convergence achieved after: 1 weight matrix, 16 total coef iterations

	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-6)	-0.687	0.321	-2.139	0.033
DCCOUTF(-4)	0.442	0.340	1.299	0.194
DABERDEEN_TH(-1)	0.016	0.116	0.135	0.893
DABERDEEN_TH(-1)*DCCOUTF(-1)	-0.061	0.248	-0.245	0.806
AR(1)	-0.352	0.075	-4.725	0.000
DCC(-2)	-0.549	0.280	-1.962	0.050
DCC(-3)	0.564	0.268	2.104	0.036
DACADIAN_TH(-1)	0.109	0.088	1.238	0.216
DACADIAN_TH(-1)*DCC(-1)	0.100	0.097	1.030	0.304
AR(1)	-0.518	0.088	-5.881	0.000
AR(2)	-0.232	0.100	-2.328	0.020
AR(3)	-0.199	0.093	-2.149	0.032
DCCINF(-6)	0.687	0.309	2.223	0.027
DBAILLIE_TH(-1)	-0.055	0.082	-0.670	0.503
DBAILLIE_TH(-1)*DCCINF(-1)	0.129	0.158	0.815	0.415
DCCINF(-7)	0.711	0.309	2.301	0.022
AR(1)	0.492	0.075	6.547	0.000
AR(2)	0.389	0.077	5.038	0.000
DCCINF(-2)	-1.935	0.450	-4.304	0.000
DCCINF(-1)	2.047	0.453	4.519	0.000
DGENESIS_TH(-1)	0.190	0.109	1.736	0.083
DGENESIS_TH(-1)*DCCINF(-1)	0.239	0.242	0.990	0.323
AR(1)	-0.600	0.093	-6.479	0.000
AR(2)	-0.315	0.104	-3.027	0.003
AR(3)	-0.046	0.092	-0.495	0.621
DCCOUTF(-8)	0.154	0.316	0.487	0.627
DLEGG_TH(-1)	0.239	0.095	2.521	0.012

Table 10.2: Seemingly Unrelated Regression Results (Malaysia) (Continued)

DLEGG_TH(-1)*DCCOUTF(-1)	-0.516	0.301	-1.713	0.087
DCCOUTF(-2)	-0.241	0.328	-0.736	0.462
AR(12)	0.295	0.096	3.063	0.002
AR(1)	-0.486	0.078	-6.266	0.000
DMARTIN_TH(-1)	0.305	0.115	2.659	0.008
DMARTIN_TH(-1)*DCCOUTF(-1)	-0.267	0.269	-0.992	0.322
DCCOUTF(-2)	-0.080	0.393	-0.204	0.838
AR(2)	-0.103	0.092	-1.111	0.267
AR(3)	0.003	0.099	0.028	0.978
AR(5)	-0.046	0.098	-0.469	0.639
Determinant residual covariance		3155.514		

Equation: DABERDEEN = C(1)*DCCINF(-6) + C(2)*DCCOUTF(-4) + C(3) *DABERDEEN_TH(-1) + C(4)*DABERDEEN_TH(-1)*DCCOUTF(-1) + [AR(1)=C(5),BACKCAST=2000M08,ESTSMPL="2000M08 2013M11"]
Observations: 160

R-squared	0.139497	Mean dependent var	0.090686
Adjusted R-squared	0.117290	S.D. dependent var	2.323252
S.E. of regression	2.182757	Sum squared resid	738.4862
Durbin-Watson stat	1.931849		

Equation: DACADIAN = C(6)*DCC(-2) + C(7)*DCC(-3) + C(8) *DACADIAN_TH(-1) + C(9)*DACADIAN_TH(-1)*DCC(-1) + [AR(1)=C(10),AR(2)=C(11),AR(3)=C(12),BACKCAST=2003M06,EST SMPL="2003M06 2013M11"]
Observations: 126

R-squared	0.201665	Mean dependent var	0.052937
Adjusted R-squared	0.161413	S.D. dependent var	2.065939
S.E. of regression	1.891872	Sum squared resid	425.9221
Durbin-Watson stat	2.036151		

Equation: DBAILLIE = C(13)*DCCINF(-6) + C(14)*DBAILLIE_TH(-1) + C(15)*DBAILLIE_TH(-1)*DCCINF(-1) + C(16)*DCCINF(-7) + [AR(1)=C(17),AR(2)=C(18),BACKCAST=2000M10,ESTSMPL="2000 M10 2013M11"]
Observations: 158

R-squared	0.097943	Mean dependent var	2.553164
Adjusted R-squared	0.068270	S.D. dependent var	1.782813
S.E. of regression	1.720881	Sum squared resid	450.1375
Durbin-Watson stat	2.138886		

Equation: DGENESIS = C(19)*DCCINF(-2) + C(20)*DCCINF(-1) + C(21) *DGENESIS_TH(-1) + C(22)*DGENESIS_TH(-1)*DCCINF(-1) + [AR(1)=C(23),AR(2)=C(24),AR(3)=C(25),BACKCAST=2003M06,EST SMPL="2003M06 2013M11"]
Observations: 126

Table 10.2: Seemingly Unrelated Regression Results (Malaysia) (Continued)

S.E. of regression	2.151616	Sum squared resid	550.9047
Durbin-Watson stat	1.994045		

Equation: DLEGG = C(26)*DCCOUTF(-8) + C(27)*DLEGG_TH(-1) + C(28)*DLEGG_TH(-1)*DCCOUTF(-1) + C(29)*DCCOUTF(-2) + [AR(12)=C(30),AR(1)=C(31),BACKCAST=2004M03,ESTSMPL="2004M03 2013M11"]

Observations: 117

R-squared	0.285440	Mean dependent var	0.054244
Adjusted R-squared	0.253253	S.D. dependent var	2.509617
S.E. of regression	2.168673	Sum squared resid	522.0489
Durbin-Watson stat	2.321982		

Equation: DMARTIN = C(32)*DMARTIN_TH(-1) + C(33)*DMARTIN_TH(-1)*DCCOUTF(-1) + C(34)*DCCOUTF(-2) + [AR(2)=C(35),AR(3)=C(36),AR(5)=C(37),BACKCAST=2003M08,ESTSMPL="2003M08 2013M11"]

Observations: 124

R-squared	0.047892	Mean dependent var	0.129320
Adjusted R-squared	0.007549	S.D. dependent var	2.170808
S.E. of regression	2.162600	Sum squared resid	551.8668
Durbin-Watson stat	2.288654		

Table 10.3: Seemingly Unrelated Regression Results (Philippines)

System: SUR_NEW
Estimation Method: Seemingly Unrelated Regression
Iterate coefficients after one-step weighting matrix
Convergence achieved after: 1 weight matrix, 29 total coef iterations

	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-5)	0.118	0.317	0.371	0.711
DABERDEEN_TH(-1)	0.059	0.069	0.855	0.393
DABERDEEN_TH(-1)	-0.168	0.197	-0.856	0.393
AR(19)	-0.112	0.114	-0.977	0.329
DCCINF(-10)	-0.281	0.239	-1.178	0.239
DCCINF(-1)	-0.489	0.280	-1.743	0.082
DLEGG_TH(-1)	-0.004	0.045	-0.094	0.925
DLEGG_TH(-1)*DCCINF(-1)	0.106	0.091	1.161	0.246
AR(4)	-0.026	0.093	-0.276	0.783
DCCINF(-5)	-0.740	0.277	-2.672	0.008
DCCINF(-3)	0.288	0.276	1.045	0.297
DGENESIS_TH(-1)	0.018	0.056	0.320	0.749
DGENESIS_TH(-1)*DCCINF(-1)	0.165	0.132	1.248	0.213
AR(19)	-0.062	0.099	-0.621	0.535
AR(2)	-0.180	0.094	-1.904	0.057
DCCINF(-1)	-0.135	0.183	-0.740	0.459
DCCINF(-2)	0.141	0.182	0.774	0.439
DACADIAN_TH(-1)	0.022	0.037	0.614	0.539
DACADIAN_TH(-1)*DCCINF(-1)	0.039	0.114	0.347	0.729
AR(3)	-0.279	0.096	-2.919	0.004
AR(1)	-0.639	0.089	-7.155	0.000
AR(2)	-0.537	0.097	-5.510	0.000
AR(6)	0.071	0.077	0.921	0.358
AR(19)	0.046	0.069	0.661	0.509
AR(22)	0.237	0.063	3.768	0.000
DCCINF(-5)	0.238	0.312	0.764	0.445
DCCINF(-2)	-0.024	0.301	-0.080	0.936

Table 9.3: Seemingly Unrelated Regression Results (Philippines) (Continued)

DBAILLIE_TH(-1)*DCCINF_TH(-1)	0.042	0.143	0.292	0.770
AR(3)	-0.070	0.132	-0.532	0.595
AR(19)	0.098	0.120	0.819	0.413
AR(2)	-0.083	0.136	-0.607	0.544
AR(5)	-0.132	0.125	-1.053	0.293
DCCINF(-9)	-0.139	0.228	-0.612	0.541
DMARTIN_TH(-1)	0.041	0.058	0.701	0.483
DMARTIN_TH(-1)*DCCINF(-1)	-0.101	0.137	-0.736	0.462
AR(3)	-0.154	0.091	-1.704	0.089

Determinant residual covariance 1.220300

Equation: DABERDEEN = C(1)*DCCINF(-5) + C(2)*DABERDEEN_TH(-1) + C(3)*DABERDEEN_TH*DCCINF(-1) + [AR(19)=C(4),BACKCAST=2006M02,ESTSMPL="2006M02 2013M11"]
Observations: 94

R-squared	0.032372	Mean dependent var	0.037340
Adjusted R-squared	0.000118	S.D. dependent var	1.364403
S.E. of regression	1.364323	Sum squared resid	167.5239
Durbin-Watson stat	2.980240		

Equation: DLEGG = C(5)*DCCINF(-10) + C(6)*DCCINF(-1) + C(7)*DLEGG_TH(-1) + C(8)*DLEGG_TH(-1)*DCCINF(-1) + [AR(4)=C(9),BACKCAST=2003M07,ESTSMPL="2003M07 2013M11"]
Observations: 125

R-squared	0.031674	Mean dependent var	-0.006720
Adjusted R-squared	-0.000603	S.D. dependent var	1.102007
S.E. of regression	1.102339	Sum squared resid	145.8181
Durbin-Watson stat	2.585837		

Equation: DGENESIS = C(10)*DCCINF(-5) + C(11)*DCCINF(-3) + C(12)*DGENESIS_TH(-1) + C(13)*DGENESIS_TH(-1)*DCCINF(-1) + [AR(19)=C(14),AR(2)=C(15),BACKCAST=2004M10,ESTSMPL="2004M10 2013M11"]
Observations: 110

R-squared	0.093832	Mean dependent var	0.042909
Adjusted R-squared	0.050266	S.D. dependent var	1.287296
S.E. of regression	1.254526	Sum squared resid	163.6788
Durbin-Watson stat	2.904717		

Equation: DACADIAN = C(16)*DCCINF(-1) + C(17)*DCCINF(-2) + C(18)*DACADIAN_TH(-1) + C(19)*DACADIAN_TH(-1)*DCCINF(-1) + [AR(3)=C(20),AR(1)=C(21),AR(2)=C(22),AR(6)=C(23),AR(19)=C(24),AR(22)=C(25),BACKCAST=2005M01,ESTSMPL="2005M01 2013M11"]
Observations: 107

Table 9.3: Seemingly Unrelated Regression Results (Philippines) (Continued)

S.E. of regression	0.798298	Sum squared resid	61.81617
Durbin-Watson stat	1.982654		

Equation: DBAILLIE = C(26)*DCCINF(-5) + C(27)*DCCINF(-2) + C(28)
*DBAILLIE_TH(-1) + C(29)*DBAILLIE_TH(-1)*DCCINF_TH(-1) +
[AR(3)=C(30),AR(19)=C(31),AR(32)=C(7),AR(2)=C(33),AR(5)=C(34)
,BACKCAST=2004M10,ESTSMPL="2004M10 2011M08"]
Observations: 70

R-squared	0.016733	Mean dependent var	-0.020223
Adjusted R-squared	-0.112220	S.D. dependent var	0.903666
S.E. of regression	0.953023	Sum squared resid	55.40340
Durbin-Watson stat	2.866056		

Equation: DMARTIN = C(35)*DCCINF(-9) + C(36)*DMARTIN_TH(-1) +
C(37)*DMARTIN_TH(-1)*DCCINF(-1) + [AR(3)=C(38),BACKCAST=2
003M06,ESTSMPL="2003M06 2013M11"]
Observations: 126

R-squared	0.036052	Mean dependent var	0.012002
Adjusted R-squared	0.012348	S.D. dependent var	1.079176
S.E. of regression	1.072492	Sum squared resid	140.3293
Durbin-Watson stat	2.757457		

Table 10.4: Seemingly Unrelated Regression Results (Taiwan)

System: SUR1
Estimation Method: Seemingly Unrelated Regression
Iterate coefficients after one-step weighting matrix
Convergence achieved after: 1 weight matrix, 15 total coef iterations

	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-2)	0.128	0.211	0.607	0.544
DCCINF(-4)	-0.301	0.206	-1.458	0.145
DABERDEEN_TH(-1)	0.026	0.051	0.501	0.617
DABERDEEN_TH(-1)*DCCINF(-1)	0.058	0.132	0.440	0.660
AR(1)	-0.538	0.075	-7.165	0.000
AR(3)	0.070	0.077	0.920	0.358
DCCINF(-3)	0.100	0.154	0.651	0.515
DCCINF(-8)	-0.161	0.144	-1.116	0.265
DACADIAN_TH(-1)	0.035	0.038	0.924	0.356
DACADIAN_TH(-1)*DCCINF(-1)	-0.036	0.123	-0.295	0.768
AR(7)	0.023	0.067	0.337	0.736
AR(2)	-0.456	0.074	-6.136	0.000
AR(1)	-0.640	0.076	-8.461	0.000
DCCINF(-3)	0.109	0.281	0.386	0.699
DCCINF(-1)	-0.360	0.274	-1.314	0.189
DBAILLIE_TH(-1)	-0.023	0.070	-0.334	0.738
DBAILLIE_TH(-1)*DCCINF(-1)	-0.140	0.298	-0.469	0.639
AR(7)	0.073	0.070	1.036	0.301
DCCINF(-5)	-0.562	0.215	-2.621	0.009
DCCINF(-3)	0.251	0.218	1.153	0.250
DGENESIS_TH(-1)	0.033	0.052	0.634	0.527
DGENESIS_TH(-1)*DCCINF(-1)	0.147	0.097	1.525	0.128
AR(1)	-0.430	0.077	-5.580	0.000
DCCINF(-2)	0.015	0.202	0.073	0.942
DCCINF(-4)	-0.101	0.198	-0.507	0.612
DLEGG_TH(-1)	-0.052	0.050	-1.037	0.300
DLEGG_TH(-1)*DCCINF(-1)	-0.034	0.069	-0.489	0.625
AR(1)	-0.440	0.084	-5.207	0.000

Table 10.4: Seemingly Unrelated Regression Results (Taiwan) (Continued)

AR(3)	0.035	0.087	0.402	0.688
DCCINF(-2)	0.182	0.207	0.880	0.379
DCCINF(-3)	-0.480	0.203	-2.369	0.018
DMARTIN_TH(-1)	0.041	0.059	0.701	0.483
DMARTIN_TH(-1)*DCCINF(-1)	0.006	0.107	0.052	0.959
AR(1)	-0.544	0.085	-6.365	0.000
AR(2)	-0.241	0.085	-2.845	0.005
Determinant residual covariance		1.389302		

Equation: DABERDEEN = C(1)*DCCINF(-2) + C(2)*DCCINF(-4) + C(3)
*DABERDEEN_TH(-1) + C(4)*DABERDEEN_TH(-1)*DCCINF(-1) +
[AR(1)=C(5),AR(3)=C(6),BACKCAST=2003M06,ESTSMPL="2003M
06 2013M11"]
Observations: 126

R-squared	0.276747	Mean dependent var	0.016905
Adjusted R-squared	0.246611	S.D. dependent var	1.312769
S.E. of regression	1.139457	Sum squared resid	155.8034
Durbin-Watson stat	2.189467		

Equation: DACADIAN = C(7)*DCCINF(-3) + C(8)*DCCINF(-8) + C(9)
*DACADIAN_TH(-1) + C(10)*DACADIAN_TH(-1)*DCCINF(-1) +
[AR(7)=C(11),AR(2)=C(12),AR(1)=C(13),BACKCAST=2003M10,EST
SMPL="2003M10 2013M11"]
Observations: 122

R-squared	0.403344	Mean dependent var	-0.027623
Adjusted R-squared	0.372214	S.D. dependent var	1.119942
S.E. of regression	0.887363	Sum squared resid	90.55252
Durbin-Watson stat	2.157347		

Equation: DBAILLIE = C(14)*DCCINF(-3) + C(15)*DCCINF(-1) + C(16)
*DBAILLIE_TH(-1) + C(17)*DBAILLIE_TH(-1)*DCCINF(-1) +
[AR(7)=C(18),BACKCAST=2003M01,ESTSMPL="2003M01
2013M11"]
Observations: 156

R-squared	0.020299	Mean dependent var	0.016667
Adjusted R-squared	-0.005653	S.D. dependent var	1.334295
S.E. of regression	1.338061	Sum squared resid	270.3515
Durbin-Watson stat	2.698510		

Equation: DGENESIS = C(19)*DCCINF(-5) + C(20)*DCCINF(-3) + C(21)
*DGENESIS_TH(-1) + C(22)*DGENESIS_TH(-1)*DCCINF(-1) +
[AR(1)=C(23),BACKCAST=2003M04,ESTSMPL="2003M04
2013M11"]
Observations: 128

R-squared	0.265344	Mean dependent var	0.031456
Adjusted R-squared	0.241452	S.D. dependent var	1.299786
S.E. of regression	1.132044	Sum squared resid	157.6273
Durbin-Watson stat	2.279417		

Table 10.4: Seemingly Unrelated Regression Results (Taiwan) (Continued)

[AR(1)=C(28),AR(3)=C(29),BACKCAST=2003M06,ESTSMPL="2003 M06 2013M11"]

Observations: 126

R-squared	0.164701	Mean dependent var	-0.001978
Adjusted R-squared	0.129897	S.D. dependent var	1.098880
S.E. of regression	1.025028	Sum squared resid	126.0818
Durbin-Watson stat	2.145710		

Equation: DMARTIN = C(30)*DCCINF(-2) + C(31)*DCCINF(-3) + C(32) *DMARTIN_TH(-1) + C(33)*DMARTIN_TH(-1)*DCCINF(-1) + [AR(1)=C(34),AR(2)=C(35),BACKCAST=2003M05,ESTSMPL="2003 M05 2013M11"]

Observations: 127

R-squared	0.278637	Mean dependent var	0.027263
Adjusted R-squared	0.248829	S.D. dependent var	1.088558
S.E. of regression	0.943454	Sum squared resid	107.7028
Durbin-Watson stat	2.145455		

Table 10.5: Seemingly Unrelated Regression Results (Indonesia)

System: SUR
Estimation Method: Seemingly Unrelated Regression
Iterate coefficients after one-step weighting matrix
Convergence achieved after: 1 weight matrix, 14 total coef iterations

	Coefficient	Std. Error	t-Statistic	Prob.
DABERDEEN_TH(-1)	-0.113	0.070	-1.613	0.107
DABERDEEN_TH(-1)*DCCINF(-1)	-0.132	0.057	-2.326	0.020
AR(1)	-0.977	0.087	-11.192	0.000
AR(2)	-0.737	0.112	-6.569	0.000
AR(3)	-0.542	0.109	-4.972	0.000
AR(4)	-0.238	0.077	-3.113	0.002
DCCINF(-1)	-0.097	0.217	-0.447	0.655
DACADIAN_TH(-1)	0.017	0.086	0.199	0.843
DACADIAN_TH(-1)*DCCINF(-1)	-0.096	0.157	-0.610	0.542
AR(1)	-0.543	0.080	-6.756	0.000
AR(15)	-0.117	0.068	-1.708	0.088
AR(16)	-0.151	0.068	-2.210	0.028
DCCINF(-10)	-0.286	0.288	-0.995	0.320
DCCINF(-3)	0.266	0.291	0.913	0.362
DBAILLIE_TH(-1)	-0.139	0.151	-0.917	0.360
DBAILLIE_TH(-1)*DCCINF(-1)	-0.001	0.210	-0.004	0.997
AR(1)	-0.530	0.101	-5.253	0.000
AR(15)	-0.085	0.090	-0.941	0.347
DCCINF(-20)	1.257	0.388	3.239	0.001
DCCINF(-1)	1.040	0.452	2.300	0.022
DGENESIS_TH(-1)	0.373	0.142	2.632	0.009
DGENESIS_TH(-1)*DCCINF(-1)	0.316	0.166	1.897	0.058
AR(29)	0.153	0.107	1.426	0.155
DCCINF(-6)	-0.614	0.195	-3.139	0.002
DLEGG_TH(-1)	0.038	0.089	0.426	0.670
DLEGG_TH(-1)*DCCINF(-1)	-0.113	0.110	-1.024	0.306
DCCINF(-4)	0.411	0.199	2.064	0.040
AR(2)	-0.516	0.106	-4.879	0.000

Table 9.5: Seemingly Unrelated Regression Results (Indonesia) (Continued)

AR(1)	-0.744	0.090	-8.244	0.000
AR(3)	-0.364	0.102	-3.552	0.000
AR(4)	-0.298	0.086	-3.458	0.001
DCCINF(-1)	0.241	0.191	1.260	0.208
DCCINF(-12)	-0.005	0.175	-0.028	0.978
DMARTIN_TH(-1)	-0.061	0.103	-0.597	0.551
DMARTIN_TH(-1)*DCCINF(-1)	-0.171	0.306	-0.559	0.577
AR(2)	-0.505	0.122	-4.122	0.000
AR(1)	-0.848	0.096	-8.840	0.000
AR(3)	-0.221	0.099	-2.240	0.026
Determinant residual covariance	1738.247			

Equation: DABERDEEN = C(1)*DABERDEEN_TH(-1) + C(2)
*DABERDEEN_TH(-1)*DCCINF(-1) + [AR(1)=C(3),AR(2)=C(4),AR(3)
=C(5),AR(4)=C(6)]
Observations: 106

R-squared	0.550008	Mean dependent var	0.003178
Adjusted R-squared	0.527508	S.D. dependent var	2.303323
S.E. of regression	1.583259	Sum squared resid	250.6710
Durbin-Watson stat	2.004483		

Equation: DACADIAN = C(7)*DCCINF(-1) + C(8)*DACADIAN_TH(-1) +
C(9)*DACADIAN_TH(-1)*DCCINF(-1) + [AR(1)=C(10),AR(15)=C(11),
AR(16)=C(12),BACKCAST=2005M09,ESTSMPL="2005M09
2013M12"]
Observations: 100

R-squared	0.318472	Mean dependent var	-0.003251
Adjusted R-squared	0.282220	S.D. dependent var	2.281242
S.E. of regression	1.932711	Sum squared resid	351.1250
Durbin-Watson stat	2.162842		

Equation: DBAILLIE = C(13)*DCCINF(-10) + C(14)*DCCINF(-3) + C(15)
*DBAILLIE_TH(-1) + C(16)*DBAILLIE_TH(-1)*DCCINF(-1) +
[AR(1)=C(17),AR(15)=C(18),BACKCAST=2006M05,ESTSMPL="200
6M05 2011M08"]
Observations: 64

R-squared	0.333271	Mean dependent var	0.021864
Adjusted R-squared	0.275794	S.D. dependent var	2.596137
S.E. of regression	2.209320	Sum squared resid	283.1034
Durbin-Watson stat	2.343969		

Equation: DGENESIS = C(19)*DCCINF(-20) + C(20)*DCCINF(-1) + C(21)
*DGENESIS_TH(-1) + C(22)*DGENESIS_TH(-1)*DCCINF(-1) +
[AR(29)=C(23),BACKCAST=2008M05,ESTSMPL="2008M05
2013M12"]
Observations: 68

R-squared	0.233842	Mean dependent var	-0.018903
Adjusted R-squared	0.185197	S.D. dependent var	2.886045

Table 9.5: Seemingly Unrelated Regression Results (Indonesia) (Continued)

S.E. of regression	2.605129	Sum squared resid	427.5620
Durbin-Watson stat	2.396326		

Equation: DLEGG = C(24)*DCCINF(-6) + C(25)*DLEGG_TH(-1) + C(26)
*DLEGG_TH(-1)*DCCINF(-1) + C(27)*DCCINF(-4) + [AR(2)=C(28),A
R(1)=C(29),AR(3)=C(30),AR(4)=C(31)]
Observations: 107

R-squared	0.478760	Mean dependent var	0.016251
Adjusted R-squared	0.441905	S.D. dependent var	2.573850
S.E. of regression	1.922815	Sum squared resid	366.0244
Durbin-Watson stat	2.027184		

Equation: DMARTIN = C(32)*DCCINF(-1) + C(33)*DCCINF(-12) + C(34)
*DMARTIN_TH(-1) + C(35)*DMARTIN_TH(-1)*DCCINF(-1) +
[AR(2)=C(36),AR(1)=C(37),AR(3)=C(38),BACKCAST=2005M07,EST
SMPL="2005M07 2013M12"]
Observations: 102

R-squared	0.453928	Mean dependent var	-0.002080
Adjusted R-squared	0.419439	S.D. dependent var	2.329817
S.E. of regression	1.775194	Sum squared resid	299.3749
Durbin-Watson stat	2.119001		

Table 10.6: Seemingly Unrelated Regression Results (Thailand)

System: SUR
Estimation Method: Seemingly Unrelated Regression
Total system (unbalanced) observations 720
Iterate coefficients after one-step weighting matrix
Convergence achieved after: 1 weight matrix, 18 total coef iterations

	Coefficient	Std. Error	t-Statistic	Prob.
DCCINF(-1)	-0.056	0.167	-0.335	0.738
DCCINF(-5)	-0.389	0.178	-2.183	0.029
DCCINF(-3)	0.433	0.194	2.228	0.026
DCCINF(-2)	-0.464	0.185	-2.508	0.012
DCCINF(-4)	0.455	0.191	2.385	0.017
DCCINF(-6)	0.093	0.150	0.619	0.536
AR(1)	-0.540	0.082	-6.578	0.000
AR(3)	-0.447	0.101	-4.425	0.000
AR(4)	-0.401	0.104	-3.871	0.000
AR(2)	-0.601	0.092	-6.542	0.000
AR(5)	-0.445	0.101	-4.385	0.000
AR(6)	-0.384	0.093	-4.136	0.000
AR(7)	-0.461	0.083	-5.545	0.000
DCCINF(-3)	0.671	0.197	3.408	0.001
DCCINF(-1)	-0.243	0.160	-1.515	0.130
DCCINF(-4)	-0.433	0.186	-2.328	0.020
AR(3)	-0.304	0.083	-3.651	0.000
AR(1)	-0.577	0.083	-6.936	0.000
AR(2)	-0.332	0.095	-3.514	0.001
DCCINF(-1)	0.141	0.127	1.109	0.268
DCCINF(-12)	0.088	0.119	0.744	0.457
DCCINF(-9)	0.021	0.128	0.161	0.872
AR(1)	-0.463	0.096	-4.821	0.000
AR(2)	-0.419	0.100	-4.181	0.000
AR(3)	-0.370	0.103	-3.588	0.000
AR(4)	-0.418	0.104	-4.029	0.000
AR(5)	-0.327	0.099	-3.310	0.001
AR(6)	-0.132	0.093	-1.418	0.157
DCCINF(-3)	0.186	0.185	1.003	0.316
DCCINF(-5)	0.032	0.148	0.217	0.828

Table 10.6: Seemingly Unrelated Regression Results (Thailand) (Continued)

AR(1)	-0.598	0.086	-6.970	0.000
AR(2)	-0.505	0.097	-5.187	0.000
AR(3)	-0.482	0.102	-4.715	0.000
AR(4)	-0.309	0.101	-3.059	0.002
AR(5)	-0.294	0.098	-3.012	0.003
AR(6)	-0.162	0.087	-1.864	0.063
DCCINF(-1)	0.295	0.173	1.708	0.088
DCCINF(-4)	0.107	0.138	0.775	0.439
DCCINF(-2)	-0.244	0.178	-1.370	0.171
AR(3)	-0.247	0.088	-2.803	0.005
AR(1)	-0.580	0.083	-6.944	0.000
AR(2)	-0.486	0.092	-5.290	0.000
DCCINF(-4)	0.376	0.181	2.079	0.038
DCCINF(-1)	0.369	0.182	2.029	0.043
AR(2)	-0.315	0.177	-1.782	0.075

Determinant residual covariance 379.4267

Equation: DABERDEEN = C(1)*DCCINF(-1) + C(2)*DCCINF(-5) + C(3)
*DCCINF(-3) + C(4)*DCCINF(-2) + C(5)*DCCINF(-4) + C(6)
*DCCINF(-6) + [AR(1)=C(7),AR(3)=C(8),AR(4)=C(9),AR(2)=C(10),A
R(5)=C(11),AR(6)=C(12),AR(7)=C(13)]

Observations: 117

R-squared	0.394082	Mean dependent var	0.038462
Adjusted R-squared	0.324168	S.D. dependent var	1.943517
S.E. of regression	1.597746	Sum squared resid	265.4903
Durbin-Watson stat	1.764205		

Equation: DACADIAN = C(14)*DCCINF(-3) + C(15)*DCCINF(-1) + C(16)
*DCCINF(-4) + [AR(3)=C(17),AR(1)=C(18),AR(2)=C(19)]

Observations: 123

R-squared	0.380023	Mean dependent var	0.050407
Adjusted R-squared	0.353528	S.D. dependent var	2.468939
S.E. of regression	1.985112	Sum squared resid	461.0586
Durbin-Watson stat	2.055446		

Equation: DBAILLIE = C(20)*DCCINF(-1) + C(21)*DCCINF(-12) + C(22)
*DCCINF(-9) + [AR(1)=C(23),AR(2)=C(24),AR(3)=C(25),AR(4)=C(26
),AR(5)=C(27),AR(6)=C(28)]

Observations: 112

R-squared	0.239619	Mean dependent var	0.033571
Adjusted R-squared	0.180561	S.D. dependent var	1.653283
S.E. of regression	1.496599	Sum squared resid	230.7004
Durbin-Watson stat	1.933250		

Equation: DGENESIS = C(29)*DCCINF(-3) + C(30)*DCCINF(-5) + C(31)

Table 10.6: Seemingly Unrelated Regression Results (Thailand) (Continued)

Observations: 119

R-squared	0.277179	Mean dependent var	-0.001597
Adjusted R-squared	0.224610	S.D. dependent var	2.092608
S.E. of regression	1.842672	Sum squared resid	373.4983
Durbin-Watson stat	1.994103		

Equation: DLEGG = C(38)*DCCINF(-1) + C(39)*DCCINF(-4) + C(40)
*DCCINF(-1) + [AR(3)=C(41),AR(1)=C(42),AR(2)=C(43),BACKCAST
=2003M09,ESTSMPL="2003M09 2013M11"]

Observations: 123

R-squared	0.339003	Mean dependent var	0.068293
Adjusted R-squared	0.310756	S.D. dependent var	2.199484
S.E. of regression	1.826028	Sum squared resid	390.1222
Durbin-Watson stat	2.056223		

Equation: DMARTIN = C(44)*DCCINF(-4) + C(45)*DCCINF(-1) +
[AR(2)=C(46)]

Observations: 126

R-squared	0.078575	Mean dependent var	0.038571
Adjusted R-squared	0.063592	S.D. dependent var	1.863687
S.E. of regression	1.803456	Sum squared resid	400.0518
Durbin-Watson stat	2.801980		